THE CURRENT INFANT FEEDING PRACTICES AND RELATED FACTORS OF ZULU MOTHERS WITH 0 - 6 MONTH OLD INFANTS ATTENDING PMTCT AND NON–PMTCT CLINICS IN CENTRAL DURBAN, KWAZULU NATAL: AN EXPLORATORY STUDY.

by

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Submitted in fulfilment of the academic

requirements for the degree of

Master of Science

in the

Discipline of Dietetics and Human Nutrition,

School of Agricultural Sciences and Agribusiness,

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Pietermaritzburg

2005

ABSTRACT

Introduction

Exclusive breastfeeding for the first six months of an infant's life is recommended worldwide. In 1998 the South African Demographic and Health Survey (SADHS) showed that only 10% of mothers exclusively breastfeed at three months. As the HIV virus is transmissible via breast milk, UNAIDS (2002) recommends that women in developing countries should be given a choice of feeding method after being counselled on the risks and benefits of breast feeding versus formula feeding. As a result, the Prevention of Mother–to–Child Transmission (PMTCT) programme was launched in KwaZulu-Natal with the aim of providing interventions to prevent mother–to–child transmission of the HIV virus. However, research has shown that infant feeding practices are influenced by numerous factors. Ultimately mothers will feed their infants in a manner they feel comfortable with, even if it is not always the most appropriate choice.

Aim

The aim of this study was to determine and compare current infant feeding practices and some of the factors that influenced these practices among Zulu mothers with 0 – 6 month old infants attending PMTCT and non–PMTCT clinics in Central Durban, KwaZulu-Natal.

Methodology

A cross-sectional, descriptive survey was conducted amongst 150 mothers sampled from three non–PMTCT clinics and 150 mothers sampled from three

PMTCT clinics. Systematic random sampling of mothers attending the two types of clinics was used to ensure an equal number of mothers with infants aged 0 - < 6 weeks, 6 - < 14 weeks and 14 weeks to 6 months. The number of mothers interviewed per clinic was determined proportionate to clinic size. Interviews were conducted in Zulu by trained fieldworkers according to a structured interview schedule consisting of 87 open– and closed-ended questions.

Summary of most important findings and conclusion

Overall, one quarter of the mothers attending non–PMTCT and one third of mothers at PMTCT clinics were practising exclusive breastfeeding at the time of the survey. The general trend was that mothers attending PMTCT clinics were more inclined than those attending non-PMTCT clinics to breastfeed their infants exclusively (34% versus 24% respectively) or to formula feed (16,7% versus 12,7% respectively). Furthermore, there was a significant decline in exclusive breastfeeding and predominant breastfeeding with increasing infant age in both clinic groups. The opposite held true for mixed feeding and formula feeding in that infants were more inclined to mixed feeding or formula feeding with increasing infant age. In both clinic groups, exclusive breastfeeding was the method of choice in the 0 - < 6 week age category, while a preference for mixed feeding was shown in the 6 - < 14 week category. This trend persisted in the 14 week - < 6 month age category, especially in the non–PMTCT clinics, while there was a small but pronounced increase in formula feeding amongst PMTCT mothers. Although these findings can be explained as a result of implementing the PMTCT programme, the positive trends observed in non–PMTCT clinics serve as an indicator that the Integrated Nutrition Programme (INP) and Baby Friendly Hospital initiative have also had an impact on the feeding choices mothers make.

Despite the limited duration of the PMTCT programme at the time of the study, indicators of the impact of the intervention include that a lower percentage of PMTCT mothers introduced foods and/or liquids in addition to breast milk to their infants before six months of age compared to non–PMTCT mothers. Furthermore, more mothers attending PMTCT clinics were shown how to breastfeed and were more likely to have received information about formula feeding. Despite these indicators of a positive impact of the PMTCT programme, the mean age for introducing liquids and/or solids in addition to breast milk was about six weeks and the incidence of this practice was very high for both groups. The similar incidence of formula feeding observed between the two clinic groups suggests the presence of constraints to safe infant feeding choices among mothers attending PMTCT clinics .

As observed, infant feeding practices were still not ideal in either of the two clinic groups. However, the high level of antenatal clinic attendance documented for both groups serves as evidence that, if opportunities for providing mothers with appropriate infant feeding advice are utilized optimally, the antenatal clinic could serve as an ideal medium through which infant feeding education can take place, especially as the clinic–based nursing staff were cited as the most important source of infant feeding information by both groups of mothers in the antenatal and postnatal phases. The documented infant feeding practices should be interpreted against the backdrop of factors such as socio–demographic characteristics of the mothers, availability of resources such as social support from peers and significant others and reigning infant feeding beliefs that could influence infant feeding decisions.

Predictors of exclusive breastfeeding in PMTCT and non – PMTCT clinics were determined by means of multivariate logistic regression analysis. Significant

values were obtained for both clinic groups in terms of the infant not having received liquids in addition to breast milk. No additional predictors were found amongst mothers attending non-PMTCT clinics, however predictors amongst mothers attending PMTCT clinics included whether the mother had not visited the clinic since the infant's birth, whether she practiced demand feeding and whether she was experiencing stress at the time of the study. The limited number of predictors of exclusive breastfeeding documented in this study, especially among non-PMTCT mothers may be explained by the fact that infant feeding behaviour is multifactorial by nature and the interaction between factors that influence feeding choice is strong.

Recommendations

- **To health authorities:**

Health workers conducting infant feeding education need to be aware of the infant feeding practices and unfounded infant feeding beliefs held by their target group. Many women make their infant feeding decisions early in pregnancy. As a result, antenatal infant feeding education needs to commence as early as possible during pregnancy. The mother's first postnatal visit needs to occur before the infant is six weeks old. Where mothers opt to formula feed, they should be provided with the necessary practical advice. Nursing staff and PMTCT counsellors involved in infant feeding education should receive appropriate training and regular, ongoing education regarding the promotion of appropriate infant feeding practices.

- **For further research:**

Appropriate strategies should be investigated to combat inappropriate infant feeding practices by mothers and caregivers, irrespective of mothers' HIV status. Constraints to formula feeding in communities where breastfeeding is the social norm should be determined. Studies of this nature should be conducted in a non–clinic environment. When designing interventions to promote exclusive breastfeeding among a similar target group significant

predictors identified in this study should be considered as well as the significant variables that were fed into the multivariate logistic regression model.

PREFACE

The survey described in this dissertation was carried out in the Discipline of Dietetics and Human Nutrition, School of Agricultural Sciences and Agribusiness, Faculty of Science and Agriculture, University of KwaZulu-Natal, Pietermaritzburg from November 2002 to December 2002, under the supervision of Professor Eleni Maunder.

This study represents the original work by the author and has not otherwise been submitted in any form for any degree or diploma to any University. Where use has been made of the work of others, it is duly acknowledged in the text.

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11. LIST OF ABBREVIATIONS

ACC/SCN – Administrative Committee on Coordination: Sub-Committee on Nutrition

AIDS – Acquired immunodeficiency syndrome

BF - Breastfeeding

EBF – Exclusive breastfeeding

FAO – Food and Agricultural Organization

HIV – Human immunodeficiency virus.

HIV-1 – One of two types of HIV that have been isolated so far. HIV-2 is used to denote mother-to-child transmission

INP – Integrated Nutrition Programme

Non PMTCT Clinic – Clinic where the PMTCT programme has not been implemented

ORS – Oral rehydration solution

PMTCT Clinic – Prevention of mother-to-child transmission clinic

SADHS – South African Demographic and Health Survey

SAVACG – South African Vitamin A Consultative Group

UNAIDS – The Joint United Nations Programme on HIV/AIDS

UNICEF – United Nations Children's Fund

WHO – World Health Organization

AKNOWLEDGEMENTS

I hereby wish to acknowledge the following persons and organizations, and to express my sincere gratitude to them for their contribution towards this study:

- Prof. Eleni Maunder, University of KwaZulu-Natal for her guidance, ongoing support and caring supervisory style;
- Dr Marjanne Senekal, University of Stellenbosch who shared with me her vast knowledge, research experience and analytical thought processes;
- Dr Bruce Faulds, University of KwaZulu-Natal, whose statistical input proved to be invaluable at all stages of the data capturing and analysis processes;
- Ms Tonya Esterhuizen, University of KwaZulu-Natal, for conducting the multivariate logistic regression analysis;
- Ms Fiona Ross, University of KwaZulu-Natal, for her input during the conception of the study and for giving her valuable advice on questionnaire development;
- Ms Tanya Doherty, Research Officer – PMTCT, Health Systems Trust, Cape Town, for her input in ensuring that the research outcomes have a broader application in terms of their relevance to PMTCT clinics;
- Health Systems Trust for funding this study;
- Dr Daya Moodley, Project Manager: PMTCT Programme, KwaZulu-Natal and her staff, for facilitating access to the PMTCT clinics in Central Durban;
- Sister Rosh Sahadeo, Personal Services, Ethekwini Municipality, Durban and her staff, for facilitating access to non–PMTCT clinics in Central Durban;

- Mothers who took part in this study;
- Fieldworkers Sli Mokoena, Lunga Bhengu, Xolo Basi, Buhle Mnguni, Nomthi Khumalo, Phumzile Ngonyama and Thenji Shange for the enthusiasm and dedication they showed during the data collection process;
- Heleen Grobbelaar for her support and friendship;
- Francois and Edwin Kassier for all their hugs and kisses, backrubs and cups of tea during long hours spent in front of the computer;
- Ruben Kassier for all the love and support since the inception of my studies 21 years ago and the tremendous sacrifices he has made to make this milestone in my academic career possible. This study is dedicated to him.

CHAPTER ONE:

THE PROBLEM AND ITS SETTING

1.1 Motivation for the study

The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) recommend that exclusive breastfeeding should commence at birth and be continued for 6 months (180 days) (Greiner, 2001; Administrative Committee on Coordination Sub–Committee on Nutrition (ACC/SCN) 2000: 33) to achieve optimal growth, development and health (WHO/UNICEF 2004: iv, 6). The term exclusive breastfeeding is used when all fluid, energy, and nutrients are provided by breastmilk, with the possible exception of small amounts of medicinal supplements (Kersting & Dulon 2001; Department of Health & UNICEF 2000: 6; Smith & Kuhn 2000; Brown, Dewey & Allen 1998: 3; Gamatie 1997 & Greiner 1996).

In South Africa, one of the national goals of the Integrated Nutrition Programme (INP) is to enable all women to breastfeed their children exclusively up to about the first six months of life and thereafter to continue breastfeeding in addition to the introduction of appropriate complementary foods up to twenty four months of age (Department of Health, Directorate Nutrition 1998).

The South African Demographic and Health Survey (SADHS) (1998: 134) published the first national information on exclusive breastfeeding rates. Only 10% of infants between nil and three months are exclusively breastfed. The percentage falls to 2% for infants between the ages of four to six months. According to De Villiers (1997), the early introduction of supplementary foods seems to be the rule rather than the exception in South Africa. This observation has been confirmed by local researchers such as Croucher,

Schloss and Bourne (2000); Moodley, Linley and Saitowitz (1999); Faber, Oelofse, Kriek and Benade (1997); Delport, Becker and Bergh (1997); Richter (1994) and Odendaal (1988).

Early mixed feeding is of concern, as WHO/UNICEF (2004: 5); Davies–Adetugbo and Adetugbo (1997); Pinstrup–Andersen, Pelletier and Alderman (1995: 340); Williams, Baumslag and Jelliffe (1994: 119) and Kustin, Kardjati and Van Steenbergen (1985) explain that it is one of the factors that is responsible for malnutrition, growth faltering and the high mortality rate in infants in developing countries. In South Africa, growth faltering usually sets in during the weaning period (Vorster, Oosthuizen, Jerling, Veldman & Burger 1997: 26) and the eventual outcome is stunting (Faber et al. 1997). Data generated by the South African Vitamin A Consultative Group (SAVACG) (1996) indicate that one in four South African children aged six to seventy one months, is stunted. On a provincial level, the incidence of stunting in KwaZulu-Natal is one in six.

According to UNAIDS (1996), the overwhelming source of HIV infection in young children is mother–to–child transmission. The virus may be transmitted during pregnancy, or labour and delivery, or by breastfeeding. As a result of the available evidence linking breastfeeding to HIV transmission, Moodley et al. (1999) are of the opinion that HIV transmission through breastmilk has complicated the advice one now gives on breastfeeding. A meta–analysis conducted by Dunn, Newell, Ades and Peckham (1992), estimates that breastfeeding may increase the rate of transmission by 14%. The risk of transmission increases to 29% for a mother with a newly acquired infection in the breastfeeding period. A later meta– analysis conducted by De Cock, Fowler and Mercier (2000) indicates that breastfeeding may be responsible for one third to one half of HIV infections in infants and young children in Africa. However, according to WHO (2003a), the rates of mother–to–child transmission of the HIV virus in developing countries range from 13 –

42% with an estimated 5 – 20% of infants born to HIV–positive women acquiring the infection through breastfeeding.

The consensus on vertical transmssion of HIV by breast milk led to the recommendation that in developed countries, HIV–infected women should not breastfeed their infants (Bobat 2000). The current UN recommendations (WHO 2001) clearly state: "When replacement feeding is acceptable, feasible, affordable, sustainable and safe, avoidance of all breastfeeding by HIV–infected mothers is recommended". However, the health risks related to formula feeding in poor communities in developing countries remain high (WHO 2000). Moreover, Coutsoudis (2000) points out that should HIV–1 infected women in developing countries opt to use breastmilk substitutes, they might be stigmatized in communities where exclusive breastfeeding is being promoted. This author also states that where HIV–infected women have no option but to breastfeed, promotion of exclusive breastfeeding may be one way of increasing the safety of breastfeeding. These recommendations are based on the results of a prospective cohort study which suggested that the risk of transmission of HIV–1 is less with exclusive breastfeeding for at least the first 3 months of life than with mixed feeding, and similar to that of formula feeding (Coutsoudis, Pillay, Spooner, Kuhn & Coovadia 1999). According to the latter authors, these findings can be explained by the fact that the beneficial immune factors of breastmilk are probably counteracted by damage to the infant's gut by contaminants or allergens in mixed feeds. Latham and Preble (2000) add to this observation by explaining that exclusively breastfed babies probably maintain a healthy gut epithelium which acts as a viral barrier and that breast milk contains immune factors that have been shown *in vitro* to have antiviral and anti–HIV effects.

To address the above issue, UNAIDS (1996) recommends that women in developing countries should be given the choice of feeding method after

being counselled on the risks and benefits of breast– versus formula feeding options, based on local assessments and guidance in selecting the most suitable option for their situation. However, ultimately, the choices women make depend partly on the environment they live in. Influences by partners, elders, friends and family as well as their social circumstances and finances can play a role in their infant feeding decision (Bobat 2000).

The concept of appropriate infant feeding decisions made by HIV–positive women is particularly important in KwaZulu-Natal, South Africa, as a national survey conducted to determine the national HIV and syphilis sero–prevalence incidence of women attending public antenatal clinics revealed that on a provincial level, the HIV prevalence in KwaZulu-Natal for 2001 was estimated to be 33,5% (Ntsaluba 2002), making this province the epicenter of the AIDS pandemic. The national age–related incidence of HIV amongst women appears to be the highest in the 25 - 29 year age category, making this age group the highest risk group, especially amongst women of child- bearing age (Ntsaluba 2002).

In order to address the above problem, the Prevention of Mother–to–Child Transmission (PMTCT) programme was launched in KwaZulu-Natal in June 2001 (Moodley 2002). The aim of the programme is to provide interventions to prevent mother–to–child HIV transmission among all pregnant women in the province. Some of the specific objectives of the project are to provide voluntary confidential counselling and an HIV testing service in clinics offering routine ante–natal services, and to provide counselling on safe infant feeding practices for HIV–positive women. One of the strategies to implement the programme includes the offering of free breast milk substitutes to women who decide to use it, coupled with minimising associated risks through counselling. An alternative is to provide counselling on safe breastfeeding practices. This includes the promotion of exclusive breastfeeding and the correct breastfeeding technique to reduce the risk of mastitis and nipple

damage. The latter advice is coupled with early cessation of breastfeeding. Training of nursing staff and other staff members, including lay counsellors, on PMTCT-related issues also forms part of the programme (PMTCT Programme KZN 2002).

The importance of the above programme lies in the fact that inappropriate infant feeding practices such as mixed feeding may provide the infant with the worst scenario: exposure to the HIV virus as well as interference with breast milk's anti–infective properties which would otherwise protect the infant against diarrhoea and other infectious diseases (WHO/UNICEF 2004: 16; Nommsen–Rivers & Heinig 1997). According to Rollins, Filtteau, Coutsoudis and Tomkins (2001), intestinal permeability in the young infant has been suggested as a possible means of entry for the virus, but evidence is limited. As a result, it seems biologically plausible that mixed feeding increases the risk of HIV transmission by making the gut more susceptible to the virus through mechanical or inflammatory mechanisms (WHO/UNICEF 2004, p12).

These facts therefore underline the importance of educational strategies to improve infant feeding practices. These strategies need to promote appropriate feeding practices for women, some of whom are HIV-positive, along with the promotion of exclusive breastfeeding for women who are HIV-negative or do not know their HIV-sero status. Through this combined approach, it should be possible to achieve the ultimate goal of increasing overall child survival while reducing HIV infection in infants and young children (WHO 2003a: 2). The overall challenge is therefore to improve feeding for all infants and younger children, regardless of their mother's HIV status. These sentiments are also echoed by Onofiok and Nnanyelugo (1998). However, the ACC/SCN (2000: 41) stresses that the challenge from a public health perspective is to translate the vast scientific literature on

breastfeeding and complementary feeding recommendations into effective interventions that are understood and accepted by the population at large.

It is well known that the dietary change process is very complex. To ensure that programme planning is done in a logical sequence and that the behaviour change process is well understood and facilitated, the integration of some health education theories and models has been suggested (Contento, Balch, Bronner, Lytle, Maloney, Olson & Swadener 1995). However, considering the complex nature of formulating appropriate infant feeding messages for South African women against the backdrop of a high national HIV prevalence, merely utilizing theory in programme design will not suffice in gaining insight into the factors that need to be considered for programme design. Identification of actual infant feeding practices of women attending PMTCT as well as non–PMTCT clinics and investigating possible differences between the two clinic types, will ensure insight into the various factors that influence infant feeding decisions. Despite the fact that the PMTCT programme was only implemented in June 2001, data generated from such an investigation would be relevant and informative.

Application of integrated programme planning models such as the Precede–Proceed model (Weber Cullen, Bartholomew, Parcel & Kok 1998; Stanhope & Lancaster 1996: 251; Graeff, Elder & Mills-Booth 1993: 23) in planning a health education programme not only highlights the complexity of dietary change, but also the dynamic interactions among numerous personal, behavioural and environmental variables, the nature of the change process and the importance of a systematic process for designing nutrition education interventions (Kassier 2000; Contento et al. 1995).

An audit of locally implemented nutrition education interventions revealed that there is a definite need for well planned and structured nutrition education strategies promoting appropriate, safe infant feeding practices

within the context of the high HIV prevalence, especially in KwaZulu-Natal (Kassier 2001).

To facilitate the development of guidelines regarding infant feeding for the education of Zulu women attending municipal and provincial clinics in central Durban, a Programme Planning Model was developed (Kassier, Senekal, Ross & Maunder 2001) (Figure 1).

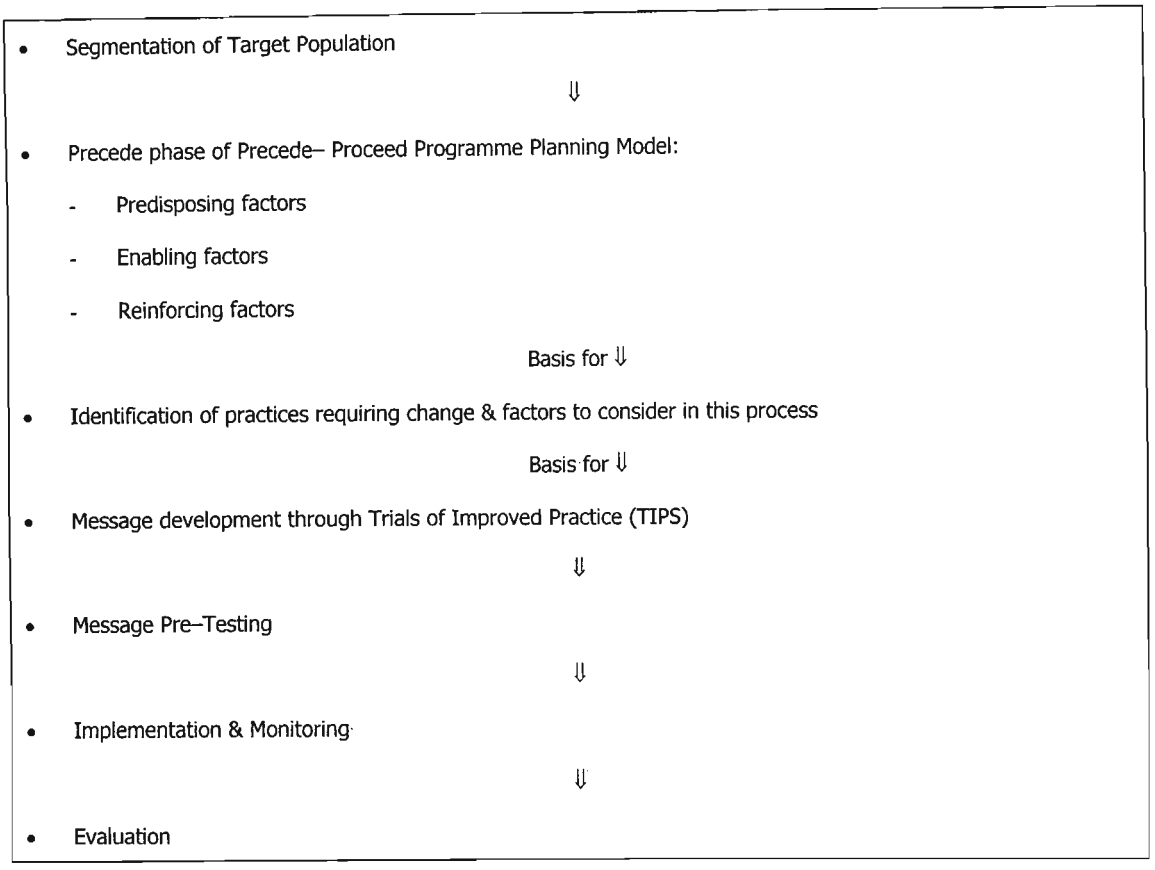


Figure 1: Programme Planning Model (Kassier et al. 2001)

As can be seen from this model, a crucial first step in this process is to determine the actual feeding practices of mothers as well as the factors influencing their feeding choices. According to the Precede–Proceed Programme Planning Model, these factors can be termed predisposing, enabling and reinforcing factors. An in-depth literature search as well as assessment of other data sources indicated that no detailed information in

this regard was available for the target group in the central Durban area (Kassier 2001). Given the recent implementation of the PMTCT programme at the inception of this study, it was crucial to determine current infant feeding practices of mothers attending PMTCT and non–PMTCT clinics as well as some of the factors that influenced their infant feeding decisions.

1.2 Aim of the study

The aim of this study was therefore to determine and compare the current infant feeding practices and associated factors of Zulu mothers with 0 – 6 month old infants attending PMTCT and non–PMTCT clinics in central Durban, KwaZulu-Natal.

1.3 Objectives

For the purpose of this study, the following objectives were formulated:

1.3.1 To describe and compare the socio–demographic characteristics of mothers attending PMTCT and non–PMTCT clinics.

1.3.2 To describe, categorize and compare current infant feeding practices of mothers attending PMTCT and non–PMTCT clinics.

1.3.3 To describe and compare the following about mothers attending PMTCT and non–PMTCT clinics:

1.3.3.1 indicators of knowledge, attitudes, perceptions and beliefs regarding infant feeding practices

1.3.3.2 indicators of the influence of family, friends and clinic-based health workers in shaping current infant feeding practices

1.3.3.3 the availability of resources that could influence infant feeding practices

1.3.3.4 physical and emotional health of mothers attending the respective clinics

1.3.4 To determine and compare factors that were significant predictors of exclusive breastfeeding among mothers attending PMTCT and non–PMTCT clinics

1.4 Definition of terms

For the purpose of this study, the following infant feeding practices and clinic categories were used for the purpose of data grouping, interpretation and discussion:

1.4.1 Exclusive Breastfeeding

The infant's sole source of nutrition is breast milk with the complete absence of water, herbal tea or foods, except vitamin/mineral drops, syrups and medicine preparations (WHO/UNICEF 2004: iv; Kersting & Dulon 2001; Department of Health & UNICEF 2000: 6; Smith & Kuhn 2000; Brown et al. 1998: 3; Gamatie 1997 & Greiner 1996).

1.4.2 Predominant Breastfeeding

The infant's predominant source of nutrition is breast milk. However, the infant may also have received water or water–based drinks, for example sweetened or flavoured water, teas or infusions; fruit juice; oral rehydration salts (ORS); drop- and syrup forms of vitamins, minerals; and medicines or folk fluids (in limited quantities). With the exception of fruit juice and sugar–water, no food–based fluid is allowed under this definition (WHO 2002a: 4; Kersting & Dulon 2001).

1.4.3 Mixed Feeding

Mixed feeding refers to giving the baby breast feeds in conjunction with some artificial feeds such as milk or cereal or other food (WHO 2002a: 4; Sachdev & Mehotra 1995). In the literature the term mixed feeding is also sometimes referred to as partial breastfeeding.

1.4.4 Formula Feeding

Formula feeding refers to giving a child who is not receiving any breast milk a suitable breast milk substitute (WHO 2002a: 5; Kersting & Dulon 2001). The terms replacement feeding, non–breastfeeding or bottle feeding are also sometimes used in the literature to indicate formula feeding (WHO/UNICEF 2004: vi).

1.4.5 PMTCT Clinic

A PMTCT (prevention of mother–to–child transmission) clinic is a clinic participating in the PMTCT programme (PMTCT Programme KZN 2002).

1.4.6 Non-PMTCT Clinic

A non–PMTCT clinic is a clinic where the PMTCT programme has not been implemented. At the time of the study the non-PMTCT clinics surveyed were all falling under the jurisdiction of the Ethekwini Municipality, Durban.

1.5 **Delimitations of the study**

1.5.1 The study was limited to Zulu mothers who were older than eighteen years with infants aged 0 - < 6 months attending PMTCT and non-PMTCT clinics in North Central- and South Central Durban, KwaZulu-Natal. The reason for this decision was that a review of the literature indicated that infant feeding practices were very culturally specific. As a result, mothers belonging to a different ethnic group, e.g. Sotho, were not included in the study. Furthermore, the Zulu people represent the majority of residents in KwaZulu-Natal. Younger mothers were excluded because teenagers experience many unique socio–demographic factors that influence their infant feeding decisions.

1.5.2 The study was limited to determining only some of the factors that influenced infant feeding practices as it was not feasible to conduct an in-depth study of all the possible factors that influenced infant feeding decisions.

1.5.3 The quantity of supplementary foods and liquids ingested by infants under the care of the target group was not investigated.

1.6 Assumptions

1.6.1 It was assumed that the sample would be representative of the target group.

1.6.2 It was assumed that the responses given by the respondents would be constructive and honest and that the data generated would be free of bias. According to Welman and Kruger (1999: 147), respondents may deliberately provide incorrect answers with a view of putting themselves in a positive or negative light. To obviate this, questions were constructed in such a manner that there were no "right" or "wrong" answers, minimizing the possible perception that respondents were being tested.

1.6.3 It was assumed that fieldworkers who conducted the interviews in the vernacular language of the respondents posed the questions correctly and interpreted the answers correctly.

CHAPTER TWO

REVIEW OF THE RELATED LITERATURE

2.1 Introduction

In Chapter one the importance of appropriate infant feeding practices was highlighted because of the phenomenal impact these practices have on childhood morbidity and mortality, especially in a country where the incidence of an HIV positive status amongst mothers and their infants is high.

According to Andrien (1998: 17), nutritional problems are the result of an interaction between complex and multiple socio–economic, biological and environmental factors. It is therefore not surprising that authors such as Cerquiera and Olson (1995: 65) stress the importance of identifying cultural beliefs and their associated behavioural sequences when it comes to alleviating malnutrition. It is believed that culturally appropriate solutions should improve breastfeeding practices (Kannan, Carruth & Skinner 1999). Faber and Benade (1999) and Sachdev and Mehotra (1995) elaborate on this statement, adding that factors responsible for early termination of breastfeeding have intra– and inter–regional variations.

Kylber and Yngve (2001) are of the opinion that there seems to be an agreement on the role different factors play in influencing breastfeeding among women. Some of these factors include social and economic status, support from family and society, accessibility to health care, knowledge of and attitude towards breastfeeding, support from health professionals and marketing practices of breast milk substitutes. Globally and locally, the universal recommendation of exclusive breastfeeding for the first six months of an infant's life is not a practice that is generally adhered to. As a result, insight needs to be gained into the factors that influence the timing of the introduction of liquids other than breastmilk and/or solids. Bronner, Gross,

Caulfield, Bentley, Kessler, Jensen, Weathers and Paige (1999) explain that the timing of the introduction of solid foods is strongly influenced by social factors such as tradition, culture, family and peer pressure.

According to McLachlan and Kuswayo (1997), the provision of infant care is dependent on resources such as education, knowledge, beliefs, nutritional status and the self-confidence of the care giver. Engle, Lhotska and Armstrong (1997) explain that the resources needed for caregiving behaviour are caregiver education and beliefs, caregiver mental health and self-confidence, autonomy and decision-making power at home, reduced workload and available time as well as social support for alternate care giving.

With the above in mind, the review of the related literature will firstly explore infant feeding practices applicable to urban Black infants in South Africa and how these documented feeding practices compare to those of other African countries as well to the global trend in infant feeding practices. Then the importance of promoting exclusive breastfeeding among all mothers, irrespective of their HIV status is discussed. The disadvantages of the early introduction of complementary foods form part of this discussion. A further objective of this literature review was to gain insight into the factors that influenced infant feeding decisions. It was necessary to determine whether they were socio– demographic in nature, based on cultural beliefs or a product of the environment in which the mother functioned in view of promoting the exclusive breastfeeding of infants up to six months of age.

2.2 Breastfeeding practices

2.2.1 Global

The WHO Global Data Bank on Breastfeeding estimates that globally 35% of infants between 0 – 4 months are exclusively breastfed (WHO 2002a). However, Nommsen–Rivers and Heinig (1997) and Greiner (1996) revealed that the most commonly practised infant feeding method in most parts of the world today is breastfeeding combined with supplemental juices, milks, porridges and teas. Greiner (1996) adds to this observation by stating that seeming "failures" of breastfeeding to protect infant health and survival may often be due to the nearly universal practice of early supplementation. The latter author partly links this phenomenon to urbanization. However, in poor settings, anything that replaces breast milk is unlikely to provide net value for the infant. Prelacteal feeds are any food, solid or liquid, given to a newborn before the initiation of breastfeeding (Department of Health & UNICEF 2000, p6; Manella 1997). The Department of Health and UNICEF (2000: 13). describe prelacteal feeds as that which consists of water, glucose, dextrose and other sugar drinks, commercially produced infant herbal teas, infant formula and other milk or milk products, honey, herbal or other traditional drinks or gruels that are given to the infant in the neonatal period while breastmilk production is being established (Department of Health & UNICEF 2000: 13). According to Greiner (2002), prelacteal feeding in particular is nearly universal in many parts of the world.

Gamatie (1997) adds to these sentiments by stating that almost everywhere in the world babies from a very young age are given various fluids to drink, and the concept of exclusive breastfeeding is unfortunately viewed with suspicion by both mothers and health workers.

In citing Gussler and Briesemeister (1980), Caulfield, Huffman and Piwoz (1999) explain that throughout the world "insufficient breast milk" is the principal reason why mothers begin introducing complementary foods before the appropriate time. This finding is also supported by Cohen, Haddix, Hurtado and Dewey (1995).

2.2.2 African continent

Exclusive breastfeeding is uncommon in Africa and most women give mixed feeds to their babies at an early age (Dop & Simondon 2001; Bassett 2000: Davies–Adetugbo & Adetugbo 1997; Labbock, Perez–Escamilla, Peterson & Coly 1997; Huffman & Martin 1994). In support of this finding, the WHO (2002a) states that rates of exclusive breastfeeding under 4 months of age are very low in African countries. Allen and Gillespie (2001, p136) estimate that the exclusive breastfeeding rate for 0 – 4 month old infants in Africa is 19%. Specific figures applicable to specific regions are as follows: Central African Republic: 4% in 1995, Nigeria: 2% in 1992 and Senegal: 7% in 1993. In addition to these figures, Allen and Gillespie (2001: 136) cite the rates of exclusive breastfeeding in West Africa as less than 10%. Aarts, Kylber, Hornell, Hofvander, Gebre–Medhin and Greiner (2000) report that a typical pattern of exclusive breastfeeding that emerged from a demographic and health survey conducted in Tanzania was about 40% for infants at 0 – 1 month, 25% at 2 - 3 months and < 10% at 4 – 5 months. However, these figures are higher than those reported for countries such as Zimbabwe. In Western Uganda, the median duration of exclusive breastfeeding reported for 0 – 5 month old infants was 3,5 months (Wamani, Astrom, Peterson, Tylleskar & Tumwine 2005) while a recent study conducted in Nigeria reported an incidence of 74,4% in 0 – 6 month old infants (Torimuro, Onayade, Olumese & Makanjuola 2004).

Although low, there are countries in Africa that have shown a gradual increase in exclusive breastfeeding rates with time, e.g. Benin (13% in 1996 and 16% in 1997), Mali (8% in 1987 and 12% 1999), Zambia (13% in 1992 and 23% in 1996) and Zimbabwe (12% in 1992 and 17% in 1994). These increases in exclusive breastfeeding rates are mainly due to breastfeeding campaigns and additional Baby–Friendly Hospitals and trained breastfeeding counsellors (WHO 2003b). Walker and Adam (2001) quote Bellamy (1998, 2001), explaining that in Sub–Sahara the exclusive breastfeeding rate amongst 0 – 3 month old infants was 32% in 1990 - 1996 and 34% in 1995 – 2000.

2.2.3 Urban Black South Africans

Table 1 gives an overview of the documented studies to date in which the infant feeding practices of urban Black infants were investigated.

TABLE 1: AVAILABLE INFORMATION ON DIETARY HABITS AND PATTERNS OF URBAN BLACK SOUTH AFRICAN INFANTS

Author(s)	Area/Province	Group	Type of Information
Gericke et al. (1987)	Gauteng: Atteridgeville	0 – 60 months	Urban children less breastfed and weaned earlier than rural
Brink & Boshoff (1981) Brink & Boshoff (1983) Brink & Boshoff (1984)	North-West Province: Garankua	0 – 36 months	37,5% exclusively breast fed, 25,8% mixed and 18,3% bottle fed. Supplementary feeding started from 1 month but common from 3-6 months. Most often used supplementary feeding was: porridge and bread (10-11x/week), then vegetables (5-6x/week), meat and/or sauces and stews (4-5x/week) and fruit (1-2x/week)
Richter (1994)	Gauteng: Soweto	0 – 17 weeks	37% gave water after birth Crying interpreted as hunger cue By 4 months 39% were given gruel, 22% commercial porridges and 27% mashed vegetables and fruit.
Delport et al. (1997)	Kalafong Hospital	0-15 months	At 1 month 92,5% were exclusively breastfed. (Possibility that some infants received water or other herbal mixtures in

			addition to breast milk was not established). By 3 months, 78% were receiving a supplementary food. The preferred porridge at all ages was soft maize – meal porridge.
Faber et al. (1997)	Western Cape: Kayamandi versus Ndunakazi in KZN	0–12 months	82,5% of sample introduced to breastfeeding immediately after birth, 14% introduced to breast one day after birth and 3,3% introduced 2- 3 days after birth. Average age at which solid foods were introduced: 2,9 months. First complementary food: infant cereals. Complementary food given before breastfeeding if offered in the same feeding session. Boiled water introduced to 78,3% of infants in 0 -< 3 month age category. Sugar water introduced to 58,0% of infants in same age category. Foods occur from 3 - < 6 month age category.
Croucher et al. (2000)	Western Cape: Khayelitsha	3 – 7 months	No one in sample was exclusively breastfed. 75% received water before one month of age. Majority received solids before 4 months. The reason given was "insufficient milk".
MacIntyre & Moeng (2002)	Pretoria: Soshanguve	0 – 4 months	Mean duration of exclusive breastfeeding 1 week. All received complementary foods before 4 months
Mamabolo et al. (2004)	Central region: Limpopo Province	0 – 12 months	56% of infants received some form of supplementation by the end of the first month
Sibeko et al. (2005)	Western Cape	0 – 6 months	None of the mothers reported exclusively breastfeeding. Complementary foods were fed to 32% of infants by first month of life. Perceived inadequate production of breastmilk (90% of sample) was the most common reason cited for inclusion of complementary foods and liquids.

Source: Adapted from Vorster et al. (1997: 118)

According to Moodley et al. (1999), the South African initiation rates of breastfeeding are generally high (national rate above 80%), but there is a problem with the duration of breastfeeding and with the early introduction of supplementary foods. De Villiers (1997) also agrees with the above, stating that the early introduction of supplementary foods seems to be the rule rather than the exception in South Africa. According to Odendaal (1988) and

Gericke et al. (1987), the incidence of breastfeeding among urban Black children is lower and they are weaned earlier than rural controls.

A study conducted by Faber and Benade (1999) reports that more than 60% of the infants studied were introduced to water during the first month of life: 46,5% of infants were introduced to water in the first week of life, 8,9% in the second week of life and 4% in the third week of life. A study conducted by Theron, Murray, Jordaan, Koornhof and Beukes (2000) also confirms the belief that babies need extra water.

Research conducted by Faber et al. (1997) reveals that 82,5% of infants were introduced to breastmilk immediately after birth, while 14% and 3,3% introduced the child to the breast after one day and 2-3 days after birth respectively. According to the above authors, introduction of the child to the breast a few days after birth deprives the child of the full benefit of the protection against various esoteric infections provided by antibodies in the colostrum.

A study conducted by Steyn, Nel, Kunneke, Tichelaar, Oelofse, Prinsloo and Benade (1998) describes how more than half of the study population received a herb mixture immediately after birth. This mixture is traditionally made by the grandmother. The purpose of its administration was not clear. It was also noted that many infants were given one or more of the Lennon Dutch medicines frequently for very vague complaints. The statistical model used in this study indicated a high risk of underweight when herbs or Doepa (a Lennon medicine) were given.

According to Kruger and Gericke (2000), a study conducted in the North–West Province revealed that 10,4% of women breastfed exclusively, with solids introduced at three months. In the Western Cape, 89% of infants were

exclusively breastfed at six weeks, but only 15% at four months. Unpublished data reported by Bobat (2000) reveal that the pattern in KwaZulu-Natal/Natal Midlands is similar to the findings reported by the above authors.

After investigating the results generated by the above studies, it is of interest to note that most studies documented breastfeeding initiation and duration rates. However, no mention was made of the duration of exclusive breastfeeding. The SAVACG study (1996) also documented the incidence of breastfeeding but no attempt was made to determine which subsection of the population practise exclusive breastfeeding up to the recommended 6 months of age. The South African Demographic and Health Survey (SADHS) (1998: 134) was the first study to publish national figures on exclusive breastfeeding rates.

2.3 Exclusive breastfeeding

2.3.1 Importance of exclusive breastfeeding

Exclusive breastfeeding refers to a feeding method where the infant's sole source of nutrition is breastmilk with the complete absence of water, herbal tea or foods (section 1.4.1).

The global promotion of exclusive breastfeeding centers around its numerous health benefits to the young infant. Smith and Kuhn (2000) identify potential mechanisms through which exclusive breastfeeding provides protection against gastrointestinal, respiratory and atopic disease: (1) reduction in the amount and range of dietary antigens and enteric pathogen exposure. This may maintain integrity of the intestinal mucosal barrier and limit inflammatory responses of the gut mucosa; (2) promotion of beneficial intestinal microflora

that may increase resistance to infection and modulate the infant's immune response; (3) alteration in presence/concentration/interaction of antiviral or anti–inflammatory factors in breast milk that may modulate maternal hormonal or immunologic status and (4) maintenance of the integrity of epithelial tight junctions in the mammary gland that may reduce viral load in breastmilk.

2.3.2 Disadvantages associated with the introduction of complementary foods and liquids

2.3.2.1 Early termination of breastfeeding

According to WHO (1998: 15) and WHO (1997), supplementing breastmilk with formula feeds, water, tea or juice during the early neonatal period has been associated with the early termination of breastfeeding. De Villiers (1997) and Greiner (1996) explain that this practice results in a decreased frequency of suckling, with a consequent decline in breast milk production and intake. Even the use of pacifiers increases the risk of earlier cessation of breastfeeding (Victoria, Tomasi, Olinto & Barros 1993). According to WHO (1996) the use of a pacifier also makes a baby suckle less and can also interfere with attachment. In response, the mother will produce less breast milk. For this reason Allen and Gillespie (2001, p15) and the Department of Health and UNICEF (2000: 5) strongly recommend that the use of artificial teats, bottles, pacifiers and nipple shields should be strongly discouraged in health facilities because their use is associated with more breastfeeding problems and a shorter duration of breastfeeding in developed as well as in developing countries. However, in contrast to the above sentiments, data reported by Collins, Ryan, Crowther, McPhee, Patterson & Hiller (2004) showed that there was no significant difference for any of the study outcomes

when using a pacifier in pre–term infants. As a result these authors concluded that pacifiers do not affect breastfeeding in preterm infants.

2.3.2.2 Increased incidence of infection, atopy and malnutrition

In many parts of the world an infant is given prelacteal feeds (section 2.2.1) before breastfeeding is initiated. Smith and Kuhn (2000) explain that the omission of prelacteal feeds may help to facilitate lactogenesis, thereby shortening the physiologic adjustment as milk production conforms to infant demand. A reason for this phenomenon is that infant appetite is affected by the amount of bulk and amount of energy recently consumed (Greiner 1996). Allen and Gillespie (2001: 15) explain that the use of prelacteal feeds may predispose mothers to continue with such supplementary practices after milk production has been established. This can interfere with the maintenance of breastfeeding.

According to Allen and Gillespie (2001: 135,136), in many cultures, colostrum is reportedly withheld for up to four days, primarily because it is believed to be harmful to infants. In many cases, substitute prelacteal feeds are given until the "true" milk has come in. However, where it is reported that colostrum is discarded, it may merely entail the expression of "only a few drops". Thus there is a need for careful questioning in surveys collecting data on the timing and exclusivity of breastfeeding in the first few days postpartum. In cases where the initiation of breastfeeding is delayed due to the introduction of prelacteal feeds, it has been associated with shorter breastfeeding duration (Chapman & Perez–Escamilla 1999). It is therefore not surprising that WHO/UNICEF (1994: 7) recommend that under normal circumstances the neonate requires no water or other food whatsoever during the first two to four days after birth while lactation is being initiated. The Department of Health and UNICEF (2000: 15) also state that no food or drink

other than breastmilk should be given to a newborn infant unless medically indicated.

Allen and Gillespie (2001: 29); Smith and Kuhn (2000); Frongillo and Habicht (1997); Johnson (1997) and Greiner (1996) explain how the early introduction of complementary foods and liquids results in reduced breastfeeding intensity and a resultant increased risk of infectious disease such as diarrhoea, respiratory diseases as well as atopic disease in susceptible infants. The reason for the latter is that the infant's gastrointestinal and immune systems are immature (Greiner 1996), resulting in poor nutrient digestion and absorption (Johnson 1997). Allen and Gillespie (2001: 29) add that a possible explanation for the increased incidence of diarrhoea is the contamination of bottles or food.

Data cited by Popkin, Adair, Akin, Black, Brisco and Flieger (1999) indicate that the prevalence of diarrhoea seems to double with the addition of water and teas to breastfeeding, while the addition of nutritive liquids increases the likelihood of diarrhoea up to thirteen times, depending on the age of the infant. Smith and Kuhn (2000) confirm this finding by explaining that the addition of non–nutritive liquids such as water or teas to the diets of breastfed infants younger than six months of age results in a two- to three-fold increase in diarrhoeal episodes compared to exclusively breastfed infants. Further increases in diarrhoea are observed when water quality is poor and formula feeds or solids are given. According to the above authors, infants younger than two months are at the greatest risk of developing diarrhoea but three to five month old infants are also at increased risk when breastfeeding is not exclusive.

Another negative aspect related to the early introduction of complementary foods is the increased incidence of infant malnutrition. Davies–Adetugbo and Adetugbo (1997); Diaz, Herrerros, Aravena, Casado, Reyes and

Schiappacasse (1995) and Cohen, Brown, Canahuati, Riviera and Dewey (1994) explain that when complementary foods are introduced to a very young infant, it derives less of its nutrition from breastmilk and more from other sources which may not be nutrient and calorie dense. De Villiers (1997); Greiner (1996); Cohen et al. (1994) and Sachdev, Krishna, Puri, Satyanarayana and Kumar (1991) also warn that the early introduction of complementary foods and liquids causes decreased frequency of suckling, with a consequent decline in breast milk production and intake. In the above scenario, complementary foods and liquids displace breastmilk, thus preventing the young infant from deriving maximum advantage from the nutritional, anti-infective and other properties of breast milk.

It is also known that in developing countries, malnutrition and infection act synergistically to increase child mortality (Pelletier, Frongillo, Schroeder & Habicht 1994). Subsequently Allen and Gillespie (2001: 39) report that risk for diarrhoeal morbidity in poor populations is two–fold to thirteen–fold higher when breastfed infants are given complementary foods between four and six months of age. McDade and Worthmann (1998) add to these findings by stating that breastfeeding reduces infant diarrhoea in a dose–response manner. However, this protective effect tapers off after six months and disappears after the first year of life.

Moodley et al. (1999) and Williams et al. (1994: 119) justifies the promotion of exclusive breastfeeding by explaining that early mixed feeding is one of the factors responsible for the high mortality rate of infants in developing countries. A meta-analysis conducted by Allen and Hector (2005) underlines these sentiments. They explain that available data provide convincing evidence that breastfeeding protects infants and children against gastrointestinal illnesses, otitis media, respiratory tract infections and neonatal necrotising enterocolitis in developed and developing countries.

2.3.2.3 Increased incidence of iron deficiency anaemia

Human breastmilk contains less iron than iron–fortified formula, but the bioavailability of iron in human milk is several times that of iron in formula. The consumption of non-milk feedings is thought to interfere with the bioavailability of iron from breast milk (Johnson 1997). As a result, the findings of Faqid and Qazaq (1999) are not surprising, namely that the earlier introduction of complementary foods and liquids is associated with the inhibition of iron absorption from breast milk due to the ingestion of phytates in cereals and tannins in tea. In regions where iron–fortified formula or cereals are not generally given to infants, especially in families of low to medium economic status, breastfeeding is the main preventative measure against iron–deficiency anaemia (Faqih & Qazaq 1999).

2.3.2.4 Increased incidence of force feeding

According to Johnson (1997), force feeding is associated with a young infant who is unable to convey satiety. This phenomenon is more likely to occur with complementary foods and liquids than with breastfeeding.

2.3.2.5 Aspiration of solids

During the first months of life, poorly developed swallowing skills may lead to aspiration of solids. Increased respiratory illness and persistent cough have been reported in infants who were given solids prematurely (Johnson 1997).

2.3.2.6 Reduction in contraceptive protection

Early introduction of complementary foods results in reduced breastfeeding intensity, thereby decreasing contraceptive protection for the mother (Frongillo & Habicht 1997; Borresen 1995) due to the fact that sustained, intensive nursing maintains lactation and supresses reproductive function by driving neuroendocrine mechanisms that prolong the period of postpartum amenorrhoea (McDade & Wortman 1998). According to Gamatie (1997), various studies suggest that a mother who breastfeeds her baby exclusively is more than 99% protected against the risk of pregnancy, whereas a mother who produces an inadequate amount of milk is exposed to an early return to fertility. As a result, Allen and Hector (2005) emphasize the fact that the protective effect is related to the intensity and duration of breastfeeding.

2.3.2.7 Increased incidence of chronic disease

Findings reported by Johnson (1997) reveal that early introduction of formula feeding and short duration of breastfeeding are associated with higher total cholesterol and apolipoprotein B levels in adolescents. According to the above author, breastfeeding is also strongly recommended for infants with a family history of diabetes. Initial research focused on the diabetogenicity of bovine serum albumin in infancy. However, it now appears that several plant proteins, including soy and wheat, may also be diabetogenic for some individuals. As a result, the early introduction of non-milk feedings has been associated with the development of insulin-dependent diabetes mellitus in high risk infants.

Allen and Hector (2005) also highlight the fact that a number of recent meta-analyses and quantitive reviews have indicated a protective effect of

breastfeeding against childhood obesity. These authors conclude that available evidence points towards a "probable" protective effect.

2.4 Factors that influence the decision to breastfeed

When mothers make their infant feeding decisions, their choices are shaped by factors related to the community in which they function, influences at a household level as well as variables experienced by the mother on a personal level. The latter include her knowledge, attitudes, perceptions and beliefs, her access to resources as well as the support she receives from family and friends. Hector, King and Webb (2005) shed light on this phenomenon by explaining that women are unaware of the many influences on their infant feeding bahaviour, particularly those of the broader environmental and socio–cultural influences, such as lack of support. Furthermore, the latter authors are of the opinion that women are often unable to articulate their opinions in survey responses, and/or are unable to or uncomfortable when reporting less socially acceptable or "mother–driven" reasons for not breastfeeding or for stopping breastfeeding early. As a result they tend to report more child–centred reasons such as "child did not want the breast" or reasons beyond the mother's control, notably "insufficient milk". In the following section, the factors reported on will be viewed in terms of their ability to support or undermine exclusive breastfeeding practices.

2.4.1 Socio-demographic factors

According to Ladzani, Steyn and Nel (1998), socio–demographic information is very important in gaining an understanding of the living conditions, lifestyle and resources the target group has to rely on. Subsequently parameters such as family income, household and room density can be used as parameters of living conditions. Due to the fact that formula feeding is costly and that the

appropriate use thereof requires access to clean, safe water, it can be assumed that poor living conditions are more likely to result in the choice of breastfeeding as an infant feeding option. In a study conducted by Wright, Parkinson and Drewett (2004), one of the strongest independent predictors of introducing supplementary liquids and solids was lower socio–economic status.

2.4.1.1 Age of mother

Research conducted by Gross, Caulfield, Bentley, Bronner, Kessler, Jensen and Paige (1998) indicates that a risk factor for discontinuing breastfeeding before 16 weeks postpartum is a maternal age of less than 19 years or greater than 25 years. According to the above authors it therefore seems that mothers between the ages of 19 and 25 years are more likely to continue with breastfeeding. However, a stepwise logistic regression conducted by Hoddinott, Pill and Hood (2000) to identify predictors for those women who would still be breastfeeding at three months postpartum found that younger women were less likely to continue with breastfeeding. It is therefore not surprising that Misra and James (2000) found that younger adolescents breastfeed less often than their older counterparts. According to Pobocik, Benavente, Schwab, Boundreau, Morris and Houston (2000) and Gross et al. (1998), older age and higher parity are associated with increased breastfeeding duration.

2.4.1.2 Education level of mother

The Parliamentary Bulletin (1996), states that there is a strong correlation between a lower level of education, ill health and the standard of living. In 1995, 35% of South Africans were living below the poverty line. The poverty rate of people with no education was 69% when compared to 54% of people

with a primary school education. According to the South African Vitamin A Consultative Group (1996), children whose mothers are less educated show a higher prevalence of stunting. A possible explanation for this phenomenon is that mothers with more schooling often have better nutritional knowledge and tend to give children complementary foods more frequently and in more protected, cleaner settings than uneducated ones, even after controlling for health (Brown et al. 1998: 112). The above could imply that uneducated mothers could be more likely to feed their infants inappropriately. The latter could increase the incidence of infectious disease that in turn could result in malnutrition.

According to Allen and Gillespie (2001: 28), there is a sizeable body of literature to demonstrate positive associations between mothers' educational level and their children's health and nutritional status. Although it has been suggested that feeding practices must be among the mediating factors between maternal schooling and children's nutritional status, the relationship between women's education and complementary feeding has rarely been studied explicitly (Allen & Gillespie 2001: 112). As a result it has been debated whether this association indicates a causal relationship or whether formal education is really a marker for other unmeasured variables.

Unfortunately, maternal education is also associated with a greater prevalence of formula feeding (Brown et al. 1998: 112). The latter was confirmed by study results generated in Ethiopia where it was found that literate mothers were more likely to formula feed than their illiterate counterparts (Bekele & Berhane 1999). However, according to Pobocik et al. (2000), income, access to formula and education determine the duration of breastfeeding. Data generated in Western Uganda (Wamani et al. 2005) revealed that the introduction of prelacteal feeds was higher among educated mothers, while more educated mothers in rural Malawi introduced

complementary foods at a later stage (Vaahtera, Kulmala, Hietanen, Ndekha, Cullinan, Salin & Ashorn 2001).

2.4.1.3 Marital and household status

According to Brown et al. (1998: 112), more educated mothers have a greater level of assertiveness and mothers with a higher status within the household are better able to make use of health care systems and to locate resources on her own.

A study by Pachon and Olson (1999) points towards the importance of a male presence in the home as a correlate of exclusive breastfeeding. According to these authors, when it comes to Hispanic women, married women are more likely to breastfeed than unmarried ones. This observation, however, does not necessarily hold true for other population groups.

Despite the workload and time constraints applicable to female-headed households, research revealed that children in these living situations sometimes do better than might have been expected, based on family income. The reason for this phenomenon is that intra–household distribution practices in female–headed households favour children more than in households headed by men (Allen & Gillespie 2001: 115). The results of a study conducted by De Villiers and Senekal (2002) can also be explained by the above observations of Allen and Gillespie (2001: 115). In their study, De Villiers and Senekal (2002) found that the risk for growth failure is increased when a child has a mother who is not the head of the household. On the other hand, when it comes to breastfeeding cessation, Sullivan, Leathers and Kelley (2004) state that higher levels of maternal responsibility for household tasks and infant care are highly significant predictors.

2.4.1.4 Maternal employment

Data reported by the SAVACG study (1996) indicate that low rates of breastfeeding may be a reflection of the effects of urbanization which is known to be associated with decreased prevalence of breastfeeding. The latter could be associated with a higher incidence of maternal employment in urban areas. Maternal employment can result in a lack of time for mothers to spend with their infants. This could prevent proper and frequent feeding of infants, resulting in poor nutritional outcomes (Steyn 2000). Studies conducted by Van der Elst, Pick, Isaacs and Malan (1989); Ransome, Chalmers, Herman and Reinach (1988); Hoffman, Durcan and Disler (1984) and Ross, Van Middelkoop and Khoza (1983) showed that maternal employment was the reason for the early cessation of breastfeeding and/or early use of supplements.

The link between maternal employment and the early introduction of complementary food has been investigated in a number of studies. The most consistent finding of studies on this subject is that maternal employment seems to cause earlier introduction of complementary foods than would otherwise be the case (Allen & Gillespie 2001: 113; Skinner, Carruth, Houck, Moran, Coletta, Cotter, Ott & McLeod 1997). This phenomenon could be related to the fact that exclusive breastfeeding can prove to be time consuming. To illustrate this phenomenon, an unsatisfactory improvement in the duration of exclusive breastfeeding in an urban– versus a rural area after a two–year intervention period was ascribed to the fact that a larger percentage of mothers in the urban area worked (Walsh, Dannhauser & Joubert 1996).

However, Engle (2002) explains that although studies generally find that women's employment contributes to a shorter duration of breastfeeding,

there are many mothers who can continue to breastfeed despite working outside the home. Furthermore, perceived breastmilk insufficiency, often based on the crying of the infant and not to work is often cited as the reason for cessation of breastfeeding.

2.4.1.5 Access to drinking water

Exclusive breastfeeding is an ideal way of preventing infant diarrhoea caused by the ingestion of formula feeds made with contaminated water. According to the United Nation's Children's Fund (UNICEF) (1998), poor water facilities is one of the underlying causes of malnutrition at the household level due to it being a source of infection. Since 1999, KwaZulu-Natal has been plagued by cholera which is mainly spread by contaminated water. Since 14 June 2001, contaminated water has resulted in 210 deaths in this province (Cholera in SA 2002). In the event of the infant being given unboiled water in addition to breastmilk, it could have serious health implications, especially if the water source is non-portable. It is therefore not surprising that an increase in the incidence of infant diarrhoea is observed when water quality is poor (Smith & Kuhn 2000).

2.4.2 Knowledge, attitudes, perceptions and cultural beliefs

According to the WHO/UNICEF (1994: 9), women's experiences and education from earliest childhood influence their attitudes and performance in relation to breastfeeding later in life. Regularly seeing other women breast-feed, especially in the same family or social group, is thus one of a number of important ways in which girls and young women can develop positive attitudes towards breastfeeding. It is therefore not surprising that a lack of previous breastfeeding experience is cited as a risk factor for low rates of breastfeeding (Penrose Arlotti, Hansen Cottrell, Hughes Lee & Curtin 1998).

In a study conducted by Kronborg and Vaeth (2004), the duration of breastfeeding was positively associated with the mother's previous experience with breastfeeding. In turn, the mother's knowledge about breastfeeding depends on parity. Among primiparous mothers, high knowledge was associated with a longer duration of breastfeeding, but this association was not found among multiparas. A possible explanation for this phenomenon is that multiparas have to divide their time between siblings, thereby allowing less time for breastfeeding the youngest child (Hector et al. 2005).

Sykes (1998, p14) identifies the following maternal obstacles to successful breastfeeding: insufficient motivation and knowledge, anxiety, fatigue and employment. However, a study conducted by Chatman, Salihu, Roofe, Wheatle, Henry and Jolly (2004) found no difference between exclusive and non-exclusive breastfeeding mothers in terms of their knowledge about and attitudes toward breastfeeding.

Smith and Kuhn (2000) on the other hand, highlight the fact that early mixed feeding may be related to cultural norms, ritual feeds, practical considerations and perceived inadequacy of breast milk. It is therefore not surprising that a study conducted by Kakute, Ngum, Mitchell, Kroll, Forgwei, Ngwang and Meyer (2005) in a rural area of Cameroon revealed that mothers identified cultural factors as an influence on their decision to mix–feed their babies. Some of these cultural factors included pressures by village elders and families to supplement because it is a traditional practice, and the taboo of prohibiting sexual contact during breastfeeding.

According to WHO (1996), one of the most common reasons given by mothers all over the world for stopping to breastfeed or introducing complementary foods early is that they think they do not have enough breastmilk or that the quality of their milk is poor. Local as well as international studies have provided ample evidence to confirm these

perceptions. Hector et al. (2005) are of the opinion that "insufficient milk" is one of the commonest reasons women give for stopping to breastfeed, yet indications are that less than 5% of women are physiologically incapable of producing an adequate supply of milk. Insufficient milk usually results from the woman not breastfeeding frequently enough or long enough, which in turn may be affected by circumstances such as the mother returning to work or being busy with other siblings, family disruption or dysfunction or a young mother's desire to minimise time spent in care giving. These authors therefore conclude by stating that the explanation of "insufficient milk" masks a range of underlying factors that undermine breastfeeding.

Local studies conducted by Faber et al. (1997); Ransome et al. and Reinach (1988) and Ross et al. (1983) show that a dissatisfied baby or baby that refuses breastmilk are reasons for the early cessation of breastfeeding and/or early use of supplements. In the above study conducted by Faber et al. (1997), a possible reason for this phenomenon is given as nipple confusion, as nearly one third of the breast-fed infants received formula feeds in addition to breast milk before they were three months old.

A lack of breast milk or milk being too weak is cited as the main reason for the cessation of breastfeeding in a study conducted by Theron et al. (2000). Similar findings are also reported by Sibeko et al. (2005); Caulfield et al. (1999); Cohen et al. (1999); Davies–Adetugbo (1997); Cohen et al. (1995); Sachdev and Mehotra (1995); Cohen et al. (1994); Richter (1994); Van Der Elst et al. (1989); Ransome et al. (1988) and Hoffman et al. (1984).

Richter (1994) reports that the early introduction of supplementary food could be due to a perception that crying infants are hungry. This observation was also reported during personal communications with Davies (2001) and Koekemoer (2001) as well as in studies conducted in Nigeria (Davies–Adetugbo 1997) and India (Sachdev & Mehotra 1995). In addition, the WHO

(1997) explains that the reasons mothers give infants water and/or teas relate to the belief that they will relieve pain caused by colic, prevent and treat colds and constipation, soothe fretfulness and quench thirst.

According to Kieffer, Novotny, Welch, Mor and Thiele (1997), women who make their infant feeding method decision before pregnancy (versus during or after pregnancy) and those for whom infant health is the primary reason for infant feeding choice are much more likely to choose breastfeeding than mixed feeding.

Research conducted by Cohen, Brown, Rivera and Dewey (1999) indicate that the most common reasons for giving infants other foods or fluids are: (1) custom (18%), (2) work (16%), (3) breast milk alone did not fill them up (14%), (4) the child did not want the breast (13%), and (5) low breast milk production (7%). Additional reasons for the early introduction of food or fluids other than breastmilk are: (1) to reduce disturbance to the family from the baby's crying, and (2) to prevent too much weight loss by the mother.

Gamatie (1997) reports that reasons given to justify the administration of fluids other than human milk to infants under four months of age include:

(1) prevention of dehydration and (2) preventative therapeutic purposes such as aiding digestion and prevention of colic. Gamatie (1997) also says that these beliefs and practices are so firmly anchored in local customs, that they are even found among educated people, and that it is difficult to use logical reasoning against such customs because they have no underlying Cartesian logic. It is therefore not surprising that the study sample investigated by Theron et al. (2000) reports the belief that infants need extra water.

Goldberg, Novotny, Kieffer, Mor and Thiele (1995) have observed that ethnicity influences the age when mothers introduce solid foods to their infants in several, but not all, studies of infant feeding practices.

A study conducted in Nigeria by Eregie (1998) found a relationship between birth weight and exclusive breastfeeding. A possible explanation for this finding is related to the belief that smaller infants require supplementary feeding much earlier to speed up their postnatal "catch–up " growth. Davies-Adetugbo and Adetugbo (1997) explain how poorer nutritional status (in terms of low weight–for–age) was significantly associated with earlier complementary feeding. Where complementary feeding was started before two months of age, the prevalence of underweight was greater as opposed to later initiation. These studies illustrate how low infant weight cannot only serve as a prompt for the initiation of complementary feeding, but can also be the result of premature complementary feeding.

Longitudinal and randomized controlled studies in different settings have shown that breastfeeding counselling increases rates of exclusive breastfeeding. This phenomenon can possibly be explained by mothers acquiring the knowledge and skills that are essntial to sustain exclusive breastfeeding. Research conducted by Shirima, Gebre–Medhin and Greiner (2001) among urban Tanzanian mothers who were informed about breastfeeding at an antenatal clinic, showed that they had more appropriate infant feeding practices. In a similar fashion a Nigerian study that investigated the impact of a Baby Friendly Hospital Initiative documented that exclusive breastfeeding which had once been considered to be less than 3% had significantly increased to 61% (Ojofeitimi, Esimai, Owolabi, Oluwabusi, Olaobaju and Olanuga 2000). However, when evaluating these results, cognizance should be taken of comments made by authors such as Reeves Tuttle and Dewey (1995) who conclude that many women make their infant feeding decision long before education programmes can reach them and that

the decision to breastfeed is made before 24 weeks gestation (Gross et al. 1998). It is therefore not surprising to find that Waanders and Kruger (1998) found that in 39,78% of their respondents, the decision to breastfeed had been made during early pregnancy. These results therefore illustrate that even greater emphasis should be placed on the frequency, content and timing of antenatal nutrition education in order to facilitate appropriate infant feeding decisions, irrespective of HIV status.

According to Dop and Simondon (2001), in most African countries breastfeeding is still considered an important part of the traditional culture and is actively supported and promoted by community members. This strong attachment to breastfeeding is further illustrated by Coutsoudis et al. (1999) who observed in a Durban–based study that two thirds of the HIV–positive mothers chose to breastfeed their newborn children even though they had been informed of the risk of transmission of HIV through breastmilk.

In South Africa numerous infant feeding practices that could have their origin in traditional cultural beliefs have been documented. For example, traditionally, when Zulu mothers again fall pregnant during the nursing period, the infant is immediately removed from the breast (Bryant 1949, p632). Bryant (1949, p628) also describes how traditionally Zulu infants were denied colostrum. Instead, a course cereal gruel which is highly indigestible, was given. This practice was coupled with the administration of constant herbal enemas.

Msimang (1975: 50) describes the fact that, based on tradition, Zulu infants are given a herbal mixture at birth in order to cleanse the infant's gut. This procedure is repeated again when the infant is one month old. At this age the purpose of the herbal mixture is to prevent the infant from being irritable, especially during a storm. Diarrhoea and an increase in body temperature (fever) are also attributed to a storm. Bryant (1949: 616) also describes how

traditional Zulu practice involves the use of a herbal root enema to rid the infant of meconium.

Msimang (1975: 50) also explains that cleansing an infant's gut will make the child less sluggish and stronger because the purging effect rids the infant of bad spirits. Bryant (1949: 616) describes how 2 – 3 months after birth, a stalk of castor oil is thrust into the infant's rectum. The stalk is then vigorously moved around so that the continued scraping of the gut membrane draws blood. The bigger the amount of blood drawn, the better, as it will cure the infant from sexual irritation in adulthood (especially if it is a girl).

Other local cultural practices described in the literature are related to "stomach cleansing". In a local study conducted by Steyn et al. (1998), more than 50% of the study population received a herb mixture immediately after birth. However, the purpose of its administration was not clear. Results reported by Sibeko et al. (2005) also refer to mothers using traditional herbal preparations (muthi). In their study sample, 56% of infants received their first dose of muthi before 1 month of age. In a study conducted by Badruddin, Inam, Ramzanali and Hendricks (1997) in Pakistan, "stomach cleansing" was also found amongst 16% of the study population.

From the above data it is clear that a positive attitude towards breastfeeding, based on experience and education, is conducive to an extended period of breastfeeding as is a sound knowledge base regarding the health benefits that the infant can derive from breastfeeding. On the other hand, cultural beliefs and perceptions regarding the adequacy and quality of breastmilk as well as an infant's crying being interpreted as a hunger cue can prove to be detrimental in terms of exclusive breastfeeding. It would seem that cultural beliefs rather than reference to a sound knowledge base would be a more powerful driving force in shaping breastfeeding practices.

2.4.3 Influence of family, friends and health workers on breastfeeding decisions

2.4.3.1 Health workers

According to local research conducted by Maunder and Mthuli (1998), clinic-based nursing staff is the primary source of information for the majority of mothers regarding the importance of breastfeeding and infant feeding information both antenatally and postnatally. This underlines the important role that clinic-based nursing staff can play in shaping appropriate infant feeding decisions. Shrima et al. (2001) illustrate this comment by reporting that urban Tanzanian mothers who were counselled on breastfeeding at the antenatal clinic, had improved breastfeeding practices.

However, according to WHO/UNICEF (1994: 3), health services frequently contribute unwittingly to the decline in the prevalence and duration of breastfeeding by failing to support and encourage mothers to breastfeed or by introducing routines and procedures that interfere with the normal initiation and establishment of breastfeeding. Too often health personnel may have insufficient knowledge about breastfeeding and little experience in providing appropriate support to mothers. They may also be unaware of the main factors that determine whether or not mothers breastfeed and for how long. This view is also reflected by Sykes (1998: 14) who found that health workers did not give mothers enough support to continue breastfeeding. Also, they practised inappropriate lactation management, had a lack of knowledge, projected a negative attitude and battled in coping with staff shortages. A study conducted by Shah, Rollins and Bland (2005) in rural KwaZulu-Natal, clearly showed that in this study sample consisting of doctors, professional nurses, staff nurses and community health workers there were

significant discrepancies in breastfeeding knowledge compared to WHO recommendations that promote exclusive breastfeeding..

Greiner (1996) highlights the fact that in many parts of the world health professionals have for decades been encouraging mothers to start solids earlier because they assume that increased growth rates are a proxy for improved health and survival rates. However, this assumption has simply not been adequately tested, particularly in impoverished settings.

Barletto (1999) reports that despite intense efforts of health workers at a Women, Infants and Children (WIC) clinic in the United States of America to discourage clients from introducing complementary foods prematurely, these attempts can and often are negated by well–meaning peadiatricians and other clinicians outside the bounds of the WIC program. Apparently the latter health professionals frequently instruct patients to introduce solids earlier than the recommended time frames practised in the WIC setting. Evidence such as this highlights the importance of message consistency amongst health professionals when it comes to propagating sound complementary feeding practices.

The Department of Health, Directorate Nutrition and UNICEF (2000: 4) state that health care staff should ensure that lactating women and key family members are fully informed about the benefits and management of breastfeeding, and that women are encouraged and supported to breastfeed exclusively for about six months and to continue breastfeeding after the introduction of appropriate complementary foods. In addition it is stated that managers, directors and those in charge of any health facility, institution or practice, should take responsibility for distributing the National Breastfeeding Guidelines for Health Workers and Health Facilities to all staff, including non–health staff, whether they are paid or unpaid. It is also suggested that staff of maternity wards and clinics for maternal and child

health and family planning should receive appropriate basic and in–service training on the health benefits of breastfeeding and on lactation management. All other health workers should be made fully aware of the importance of breastfeeding. However, knowledge alone is insufficient; staff also need positive attitudes towards breastfeeding (WHO/UNICEF 1994: 8). Positive attitudes toward breastfeeding can manifest in the fact that health workers themselves breastfeed their infants. As a result they could serve as role models for the community at large (WHO/UNICEF 1994: 10).

2.4.3.2 Family and friends

According to WHO (1996), a mother may lack confidence in her ability to produce enough milk if she lacks supportive family and friends. In a study conducted by Waanders and Kruger (1998), 50,5% of respondents cited their own mothers as sources of information on breastfeeding. In a study conducted by Kruger and Gericke (2000), elders and peer groups were also cited as influential figures in shaping mothers' infant feeding practices. Kieffer et al. (1997) and Sharma and Petosa (1997) add to this observation by stating that the infant's grandmother is an important influence among women who choose mixed feeding.

According to Coutsoudis et al. (1999), research conducted amongst Black mothers in Durban indicated that those who practised complementary feeding despite advice from the research team to continue with exclusive breastfeeding, tended to do so because of social pressure rather than because of their child's health. Bronner et al. (1999) also state that a review of various studies has shown that the introduction of complementary foods is strongly influenced by social factors such as tradition, culture, family and peer pressure. May (1998) echoes the findings by the above authors, stating that nutrition education needs to be dealt with as a cross–sectoral issue whereby

the whole family, not only the women, is educated, particularly in instances where women do not have control over their own income.

According to Cohen et al. (1999), characteristics of mothers who dropped out of their study in Honduras because they did not maintain EBF for up to four to six months were: (1) less education, (2) more children, (3) less prenatal care, and (4) less support from mothers, friends and neighbours. An interesting finding of the above study is that women who reported never giving their infants anything other than breast milk were no more confident of their ability to EBF and did not receive any more support from family members for EBF than those who reported giving something other than breast milk. The latter finding is contradictory to the earlier statement by WHO (1996), namely that a mother may lack confidence in her ability to breastfeed if she lacks supportive family and friends. Furthermore, the Department of Health Directorate Nutrition and UNICEF (2000: 4) state that health care staff should ensure that lactating women and key family members are fully informed about the benefits and management of breastfeeding and that women should be encouraged and supported to breastfeed exclusively for about six months.

When respondents in the Honduras study were asked who had advised them to give other fluids or foods to the child, neighbours and friends were cited most often (35%), followed by the mother's mother (26%), other family members (16%), the husband (10%), the mother–in–law (6%) and health centre personnel (4%). The main reasons given for the advice given to the mother were: (1) they fed their children that way (20%), (2) to fatten the baby (16%), (3) to be able to work (14%), (4) breast milk alone does not satisfy the baby (12%), and (5) custom (8%) (Cohen et al. 1999).

When respondents in the above study were asked the question: "Why did you give something other than breast milk?", the most common reasons for giving other foods or fluids were as follows: (1) someone else fed the baby, usually

when the mother was out of the house or not looking, (2) the mother had to leave the baby at home when she went out, (3) they were advised to do so by a family member, (4) the baby wanted it (usually when they or other family members were eating it), (5) the mother was told that the baby was thirsty (Cohen et al. 1999). In a study conducted by Theron et al. (2000), advice from family or friends was also cited as an important reason for not continuing with exclusive breastfeeding.

2.4.3.3 Role of the father

Fathers may provide a particularly important source of emotional and financial support to the breastfeeding mother. There is some evidence that when fathers contribute a higher percentage of their income to family budgets, children are better nourished. Moreover, their opinions about child care giving can have significant effects on decisions about infant feeding and particularly breastfeeding (Allen & Gillespie 2001: 117).

Research conducted by Duong, Binns and Lee (2004); Kieffer et al. (1997); Scott, Binns and Arnold (1997); Sharma and Petosa (1997) and Novotny, Kieffer, Mor, Thiele and Nikaido (1994) indicates that the infant's father is the most influential person in the decision about feeding method chosen, regardless of the feeding method chosen. However, the father is important to a larger proportion of women who breastfeed than those who formula feed. The temporal relationship (time sequence) of an infant's father on initiation and in particular duration of breastfeeding is also supported by the above postnatal studies.

According to WHO/UNICEF (2003: 12) and Scott et al. (1997) research has shown that breastfeeding is enhanced by the support and companionship provided by fathers. However, the latter authors also highlight the fact that

fathers can act as deterrents of breastfeeding. In a study conducted by Chatman et al. (2004), the male partner's role as the main source of income for the family was the only significant predictor of exclusive breastfeeding.

2.4.4 Resources that influence current breastfeeding decisions

Allen and Gillespie (2001: 27) explain that care can be defined as the behaviours and practices of the caregiver to provide food, health care, stimulation and emotional support necessary for a child"s healthy growth and development. According to the above authors, it is impossible for caregivers to provide this care without sufficient resources such as time, energy and money. According to Allen and Gillespie (2001: 116), one of the most important types of social support to the mother is alternate child care. Care by anyone but the mother or a competent adult in the first year of life can be associated with higher mortality. As a result it is important to take cognisance of the statement made by Pieterse (2000: 65) who reports that with regards to nutrition education in clinics falling under the auspices of Durban City Health, future efforts would also have to include the grandmother, as the rate of children left in the grandmother's care has risen from 44% to 60% in 2000.

The Food and Agricultural Organisation (FAO) (2000) states that in addition to having access to food, people should also have access to health services to ensure the effective biological utilization of foods. As a result, the United Nations Children's Fund (UNICEF) (1998) states that one of the underlying causes of malnutrition is inadequate access to health care services.

Allen and Gillespie (2001: 28) stress the importance of time by explaining that a lack of time may prevent proper and frequent infant feeding which would result in poor nutritional outcomes.

2.4.5 Physical and emotional health of mothers

In studies conducted by Ransome et al. (1988); Hoffman, Durcan and Disler (1984) and Ross et al. (1983), maternal illness and breast–related problems were cited as reasons for the early cessation of breastfeeding and/or early use of supplements.

According to Allen and Gillespie (2001: 115) there is a large body of evidence in the United States of America that links maternal depression with poor care giving and problematic outcomes for children. Despite reports of high levels of stress and depression among women in developing countries, studies linking these psychological factors with child care giving have not been traced in the literature. The level of confidence of the care giver is, however, often cited as a critical factor influencing the introduction of complementary feeding, but according to Allen and Gillespie (2001: 115) this hypothesis has not been tested systematically. However, according to WHO (1996), a lack of confidence, worry and stress are psychological factors in mothers that may result in a reduced breast milk intake by infants

A study conducted by De Villiers and Senekal (2002) found that the risk for growth faillure is higher in children aged 12 – 24 months where a mother has an inadequate caring attitude towards her child.

In a study conducted in Southern Brazil by Falceto, Giugliani and Fernandes (2004), depression was cited as the most prevalent mental disorder affecting both mothers and fathers. However, the above authors were not able to show a statistically significant association between maternal mental health at four months postpartum and termination of breastfeeding. It is however interesting to note that in cases where the mother had mental problems during the first month after delivery, she was twice as likely to interrupt

breastfeeding. An association was observed between maternal and parental mental health, but the quality of the couple's relationship was not associated with the interruption of breastfeeding before four months postpartum. In their study, Falceto et al. (2004) concluded that parental mental health was not associated with breastfeeding at four months in that particular setting, where most mothers had good family and social support for breastfeeding. Maternal mental health during puerperium, however, may negatively affect the duration of feeding. However, Sullivan et al. (2004) report that a higher level of relationship distress was predictive of early breastfeeding cessation at a marginal level of significance.

In a trial conducted by Nduati, John, Mbori–Ngacha, Richardson, Overbaugh, Mwatha, Ndinya-Achola, Bwayo, Onyango, Hughes and Kreiss (2000), the most common reasons cited for early introduction of weaning foods are: maternal illness, insufficient milk production (often due to maternal illness), or poor infant feeding, all of which may be linked to infant HIV–1 infection.

Dye, Wojtowycz, Aubrey, Quade and Kilburn (1997) highlight the fact that women whose pregnancies had been mistimed or unwanted, were significantly less likely to breastfeed than those whose pregnancies had been planned, even after adjustment for confounding variables and contraindications for breastfeeding.

2.4.6 Conclusion

Table 2 provides a synopsis of the factors that influence infant feeding practices.

Table 2: Factors that influence infant feeding practices

Community level
Culture and religion
Urban versus rural settings
Child care services
Workplace rights and benefits
Household level
Income, wealth and resource control
Decision–making autonomy of the caregiver
Household composition and alternate caregivers
Caregiver level
Physical and emotional health and nutritional status
Employment status
Age
Education
Knowledge, attitudes, perceptions and beliefs
Access to resources e.g. time, money, information, health care, infant care support, water
Psychosocial factors e.g. family, friends, infant's father

Adapted from: WHO (2004: 5); Brown et al. (1998: 7); Engle et al. (1997)

A review of the related literature revealed that the early introduction of complementary foods and liquids to the diet of young infants is associated with side effects that include the early termination of breastfeeding and an increase in the incidence of respiratory infections, diarrhoea and subsequent malnutrition.

It is clear that exclusive breastfeeding, although ideal for all infants aged 0 – 6 months of age, is not a practice that is widely adhered to globally, elsewhere in Africa or locally. Table 3 provides a synopsis of which factors at community level, household level and caregiver level may support or undermine exclusive breastfeeding practices.

TABLE 3: SUMMARY OF FACTORS THAT SUPPORT/UNDERMINE EXCLUSIVE BREASTFEEDING PRACTICES

Variable	Increased breastfeeding duration	Decreased breastfeeding duration
Urbanization		√
Increase in mother's age	√	√
Increase in mother's level of education	√	√
Improvement in mother's marital and household status	√	
Maternal employment		√
Increased household income	√	√
Mother's knowledge and attitude		
• Proper knowledge of and positive attitudes towards breastfeeding	√	
• Increased parity	√	√
Mother's (cultural) beliefs		
• Introduction of prelacteals		√
• Practice of stomach cleansing		√
Influence of health workers	√	√
Influence of family and friends	√	√
Influence of the father	√	√
Resources:		
• Lack of time		√
• Access to health care	√	√
• Access to information	√	
• Infant care support		√
Poor physical and emotional health of mother:		
• Maternal illness		√
• Breast problems		√
• Depression		√
• Relationship distress		√
• Unplanned pregnancy		√

The above table illustrates that there is not a clear relationship between the variables cited and breastfeeding duration. As a result, the conclusion that can be drawn from these results is that factors that are associated with extended breastfeeding duration as well as exclusivity are highly dependent on the target group in question. These findings are supported by Hartley and O'Connor (1996).

CHAPTER THREE

PROCEDURES AND METHODS

3.1 Introduction

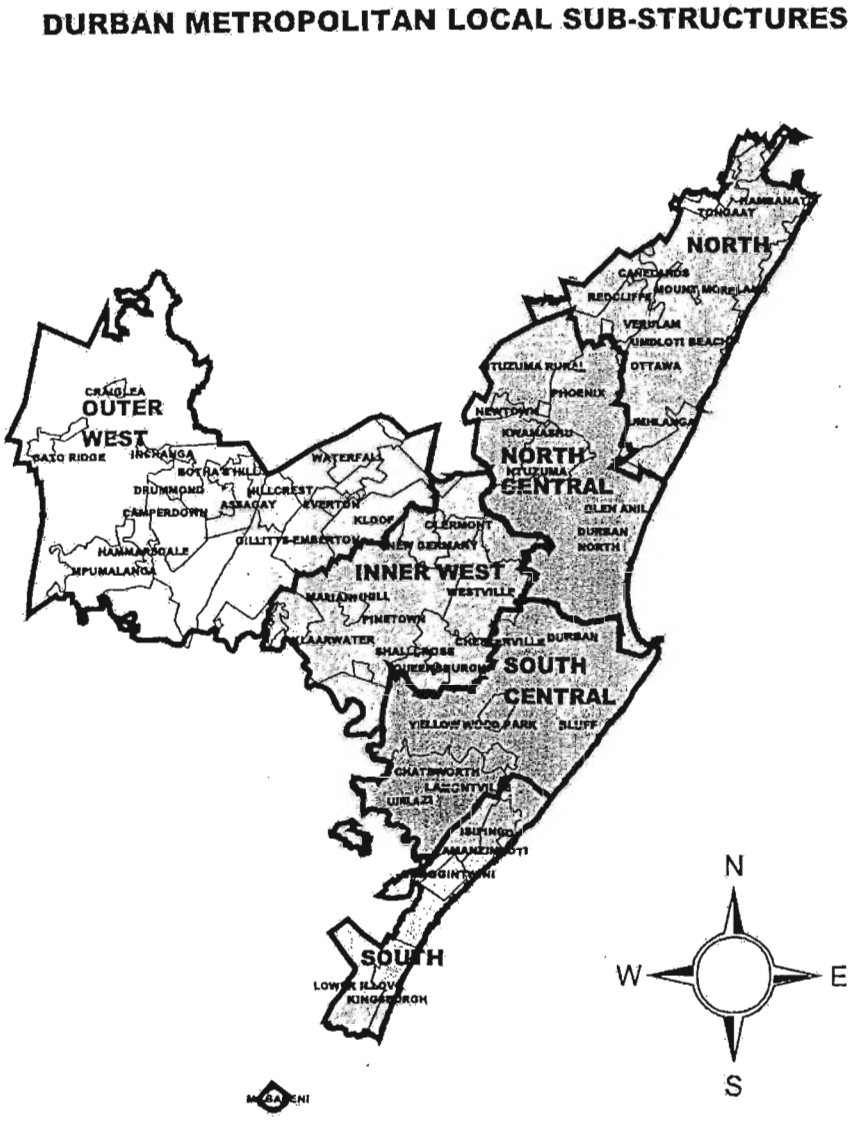
In this chapter an overview is given of the study design that was employed, the sampling procedure that was followed as well as the methods and instruments that were used for data collection purposes. The section on data collection includes a description of how the questionnaire was developed and subsequently piloted, as well as the recruitment and training of the fieldworkers that were responsible for data collection. This is followed by a description of how the data were captured, cleaned and statistically analysed. Lastly the reliability and validity of the data as well as the ethical aspects that required consideration and approval prior to the data collection phase being implemented are discussed. Throughout this chapter an attempt is made to view the methods and procedures that were followed critically in order to highlight strengths and weaknesses of the study procedure that was followed and the methods that were employed.

3.2 Study Design

Due to time and cost constraints, a cross-sectional (prevalence), descriptive survey of Zulu women and their infants aged 0 – 6 months attending PMTCT and non–PMTCT clinics in Central Durban (figure 2), KwaZulu-Natal, was conducted from November to December 2002. In an attempt to overcome possible limitations associated with this design, respondent selection took place according to whether the infants of the target group fitted into one of three age categories (3.3.2) at the time of the study. The fact that data collection took place within such a relatively short period of time can be seen as an advantage, as Welman and Kruger (1999: 95) explain that in instances

where data collection takes place over a shorter period of time it allows for comparison of respondent opinions. Data on current infant feeding practices as well as some of the factors that influenced these practices, were collected at PMTCT and non–PMTCT clinics, and compared. This design is justified as the WHO (2004: 7) cites that there is no blueprint for selecting a combination of methods used in conducting formative research. The selection should be based on (1) available information and gaps to be filled with the research; (2) experience and skills of the investigating team; (3) social and cultural considerations; and (4) resources available, i.e. time, money and supporting materials.

Figure 2: Map depicting North Central- and South Central Durban in which the study was conducted



Source: Ethekwini Municiplality (2000)

3.2.1 Advantages and disadvantages of the cross–sectional descriptive survey

Giving preference to a cross–sectional descriptive survey design over that of a longitudinal design can prove to be cost effective, both in terms of the time required for data collection and the cost implications related to the fieldwork. However, this study design is not without its limitations. Studies conducted by Aarts et al. (2000) and Bland, Rollins, Coutsoudis and Coovadia (2002), reported consistent differences in reported breastfeeding patterns at all ages between cross- sectional and longitudinal data. A higher rate of exclusive breastfeeding was obtained where data were collected by means of a cross-sectional versus a longitudinal design. Aarts et al. (2000) also highlight the fact that at all ages, cross-sectional data slightly overestimated the population that had ceased breastfeeing. In order to illustrate the above observations, a brief overview of a study that had a longitudinal and cross-sectional component within the same study will be given.

In the study conducted by Aarts et al. (2000), data applicable to infants aged 2 months, 4 months and 6 months in the cross-sectional component of the study, showed a higher rate of exclusive breastfeeding versus data collected in the longitudinal component. According to the authors, the greatest reason for this discrepancy at 2 months can be explained by the fact that infants who were labelled as being exclusively breastfed had in fact received water or water–based drinks at some previous point in time. The difference in the incidence of exclusive breastfeeding at 4 months could be attributed to the fact that infants received water or water–based drinks at some time since birth or received complementary/replacement food, mostly formula, since birth. Differences observed at 6 months could be attributed to infants who had previously, at some time since birth, received solids and/or formula. However, the above authors explain that very few infants were placed in the predominantly breastfeeding category on the basis of either method of analysis. The reason why the cross-sectional study design slightly

overestimated the population that had ceased breastfeeding, was because some infants were not breastfed during that specific 24–hour period but were breastfed again at some later time.

The above authors state that prospective daily recordings provide more detailed and accurate data than can be obtained from surveys based on recall. However, no method can rule out the possibility that an infant has received something from someone else, unbeknown to the mother. However, knowing only the "current status of exclusive breastfeeding rate" is inadequate when it comes to studying the relationship between infant feeding practices and certain health outcomes. Aarts et al. (2000), however, conclude that for other purposes, a more lenient approach toward categorization might be appropriate, but they caution that consistency in definitions is crucial for research to be comparable.

Due to the above cited limitations in a cross–sectional design, it is important that only studies that have a similar study design should be selected. for comparative purposes.

3.3 Sampling

3.3.1 Sampling frame and selection of clinics

The sampling frame involved all non-PMTCT clinics (n = 10) and all PMTCT clinics (n = 4) in Central Durban. Unfortunately, no information was available at any of the clinics on the attendance rates of mothers with 0 – 6 month old infants or the immunization statistics of number of doses given at 6, 10 and 14 weeks of age. It was therefore not possible to determine the potential number of respondents per clinic.

Using the convenience sampling method, three non–PMTCT clinics in Central Durban (Table 4) were selected from a list (n = 10) made available by the Ethekwini Municipality. Clinics where formalized research had already been conducted at the time of the study were excluded. Clinics selected were those that were predominantly attended by Zulu mothers.

At the time of the study, there were only four PMTCT clinics operational in Central Durban. The clinic which was situated in an Indian suburb was excluded because it was attended by predominantly Indian mothers. The remaining three were included in the study.

3.3.2 Sample

The survey was conducted amongst 300 Zulu mothers of infants that fell into three age categories at the time of the study, namely 0 - < 6 weeks, 6 - < 14 weeks and 14 weeks to 6 months (Table 4). Zulu women were targeted because they represent the predominant ethnographic group in the province of KwaZulu-Natal, while the Afrcan community makes up 70% of the South African population (De Castro & Hirschowitz 2003). The sample size was chosen to ensure a large enough sample within each of the three infant age categories referred to above. The infant age categories of the sample were selected to coincide with the national immunization schedule and to ensure an even spread of infants in the 0 – 6 month age group targeted by the study. Furthermore, the division of the sampling frame into three age strata ensured a more accurate view of the current infant feeding practices amongst the target group and made it possible to obtain a clearer perspective of the age category where exclusive breastfeeding would be most likely to cease. One hundred and fifty Zulu mothers were selected from Well Baby Clinics at PMTCT clinics and 150 from Well Baby Clinics at non–PMTCT clinics.

Table 4: Clinics included in the survey and numbers of mothers interviewed at each clinic

	Non–PMTCT Clinics (N = 150)			PMTCT Clinics (N = 150)		
	Lancers Road (n = 48)	Glen Earle (Newlands East) (n = 46)	Lamontville (n = 56)	KwaMashu Policlinic, Rydalvale Clinic* (n = 42)	Umlazi Section K Clinic (n = 36)	Umlazi Section D Clinic (n = 71)
Mothers with infants 0 - < 6 weeks	16	15	19	14	12	24
Mothers with infants 6 - < 14 weeks	16	15	19	14	12	24
Mothers with infants > 14 weeks – 6 months	16	15	19	14	12	24

* Infants aged 0 – 6 weeks attend the KwaMashu policlinic. Beyond 6 weeks of age they attend the Rydalvale clinic for follow-up.

For non–PMTCT clinics the proportion of mothers interviewed per clinic was based on the number of children younger than five years of age attending each PMTCT clinic on a monthly basis. For PMTCT clinics the proportion of mothers interviewed at each clinic was based on average figures of the number of pre-HIV test counselled mothers attending each PMTCT clinic on a monthly basis. The above figures were used as statistics were not available on the number of infants visiting each of the sampled baby clinics on a monthly basis.

All Zulu mothers who were sampled were given the opportunity to volunteer for participation. None of the sampled mothers declined the opportunity. The subsequent positive attitude of respondents throughout the interview process could be viewed as positive, as Welman and Kruger (1999: 95) state that better co–operation of respondents leads to greater accuracy of information obtained, especially about sensitive issues.

3.3.3 Sampling technique for Zulu mothers

Zulu mothers in each clinic were recruited by means of systematic random sampling. Inclusion criteria for selection were as follows:

The respondent (1) had to be the infant's mother;

(2) had to be older than 18 years;

(3) had to have Zulu as her mother tongue;

(4) should not have twins (index child);

(5) should not have received any formalized training in nutrition, and

(6) should have an infant younger than 6 months of age at the time of the study.

At the time of the study it was found that most infants were brought to the clinic by their biological mothers. Furthermore, no potential respondents were enrolled in a course with nutrition forming part of the syllabus. Only three respondents were excluded due to the index child being one of a twin.

The reason for the above criteria was to ensure that the study sample was as homogenous as possible. According to the inclusion criteria, it is implied that the selection of mothers was based on "purposive sampling". Use of this method implies that the sample is relatively small and that sample selection is based on predetermined criteria centred around the needs of the study in question. A purposefully selected sample is not respresentative of the population in general, therefore study findings cannot be generalized to the entire population. However, the results obtained provide valuable information about how people think and feel. In formative research, purposive sampling is used to study a focused set of issues in greater depth. Within the scope of

this study, the goal was to obtain quantitative data on the current infant feeding practices of the study population to determine what some of the reasons for these practices were. As a follow–up to a study of this nature, random sample surveys can be conducted to measure the occurrence of these practices in the general population, if this type of data is desired (WHO 2004: 8,9).

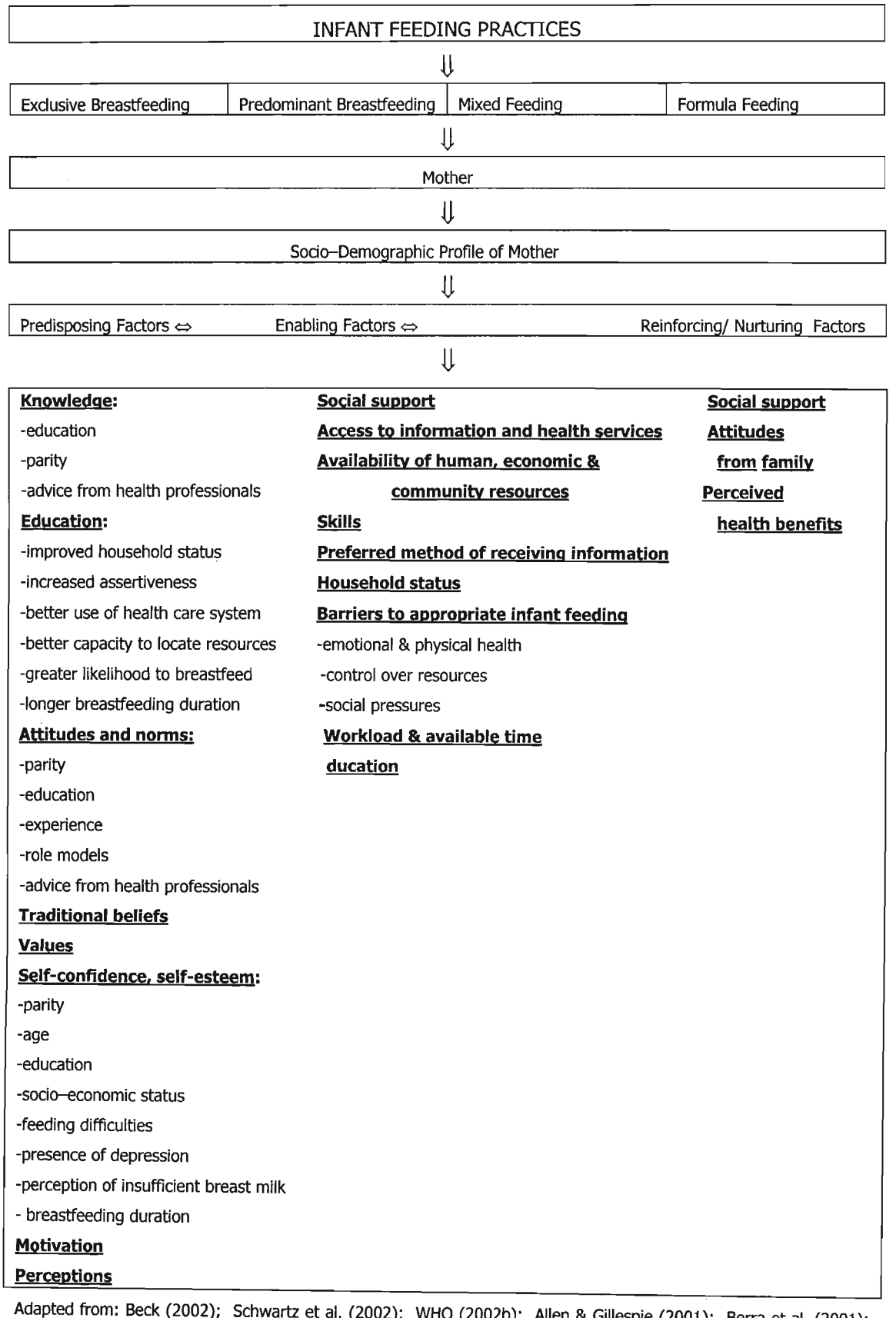
Respondents were selected as follows: the first mother waiting to be seen by clinic staff was selected if she met the inclusion criteria. She was then interviewed by a fieldworker after seeing the clinic–based nursing staff. The purpose of the above was to avoid respondent anxiety that could have occurred in cases where respondents forfeited their place in the clinic queue due to participation in the study. From then on every third mother in the queue who met the inclusion criteria was interviewed until the correct number of interviews had been conducted per age stratum. If a sampled mother did not meet the inclusion criteria, the next mother was sampled. Each clinic was visited on consecutive days until the correct number of mothers per infant age stratum had been sampled.

3.4 Methods and instruments

3.4.1 Development and pilot testing of questionnaire used to interview Zulu mothers

The dendrogram technique (Schutte 1984: 5) was used to develop the structured questionnaire used for interviewing Zulu mothers through the development of a conceptual framework on which questions were based (Figure 3). This technique provided a focus for the literature review and set boundaries within which the theory was studied.

Figure 3: Conceptual framework used for questionnaire development



Adapted from: Beck (2002); Schwartz et al. (2002); WHO (2002b); Allen & Gillespie (2001); Berra et al. (2001); Dulon et al. (2001); Marques (2001); McCarter–Spaulding & Kearney (2001); ACCN/SCN (2000); Satia et al. l (2000); Theron et al. (2000); Cohen et al. (1999); Dennis & Faux (1999); Bick et al. (1998); Eregie (1998); Reed et al. (1998); Davies–Adetugbo (1997); Engle et al. (1997); Kieffer et al. (1997); Skinner et al. (1997); Steyn,

Pettifor, Van Niekerk & Nel (1997); Underwood et al. (1997); Greiner (1996); Losch et al. (1995); WHO/UNICEF (1994); Hubley (1993); Green & Kreuter (1992); WHO/UNICEF (1989); Walter et al. (1986); Forsyth et al. (1985);

It is important to note that in this survey, characteristics such as knowledge, self–esteem, self-efficacy, self-confidence, depression and attitude were not assessed by means of separate questionnaires or instruments, but rather with a number of appropriate questions, as is suggested by Neumark–Sztainer, Story, Faibisch, Ohlson and Adamaik (1999) for larger surveys in which a large number of variables are being assessed. For example, a selection of questions was taken from the Postpartum Depression Predictors Inventory (Beck 2002) in order to investigate indicators of depression amongst the mothers who were interviewed. Questions included from this inventory were indicated as "bdi" on the interview schedule (Annexure I). Use was also made of the documents "Breastfeeding and replacement feeding practices in the context of mother–to–child transmission of HIV: an assessment tool for research" (WHO 2002b) and "Ten steps to successful breastfeeding" (WHO/UNICEF 1989) to ensure that relevant questions formed part of the structured interview schedule.

The resulting questionnaire was assessed by experts in the field to evaluate the appropriateness and coverage thereof, especially in terms of content. This panel of experts included 3 academics from the Discipline of Dietetics and Human Nutrition with experience in studies of this nature, one Zulu nutritionist from the Department of Health, one Zulu psychologist and the research officer responsible for PMTCT–related research from the Health Systems Trust. Table 5 can serve as a yardstick to determine the extent to which the questionnaire covered the objectives of the study (section 1.3) as well as the concepts identified in the conceptual framework (figure 3).

Table 5: Survey objectives, concepts and corresponding survey questions

Objective	Variable applicable to the objective	Question
Objective 1.3.1: **Socio–demographic profile of mother**	Age, education, socio–economic status, household status	6,7,8,9,10,11,12,13, 14,16,17,18,19
Objective 1.3.2: **Current infant feeding practices**	Exclusive breastfeeding, predominant breastfeeding, mixed feeding, formula feeding	40,41,42,43,44
Objective 1.3.3		
• **Knowledge**	Education, parity, advice from health professionals, advice from friends and relatives, preferred methods of receiving information	7, 8, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 34, 35, 36, 37, 41, 42, 43, 44, 45, 46, 49, 50, 51, 52, 53, 54, 55, 57, 60, 61, 62, 63, 67, 68, 69, 70, 73, 74, 75, 80
• **Attitudes**	Parity, education, experience, role models, advice from health professionals, advice from friends and family	7, 8, 23, 25, 26, 28, 30, 31, 32, 33, 34, 35, 36, 37,45, 46, 47, 48, 49, 50, 51, 52, 54, 55, 57, 60, 71, 74, 75
• **Perceptions**	Hungry baby, insufficient breastmilk, poor quality of breastmilk, perceived health benefits	36, 37, 50, 51, 60, 61, 62, 63, 66, 67, 68, 72, 73, 76, 78
• **Cultural beliefs**	Prelacteals, stomach cleansing, introduction of liquids and solids	43, 44, 49, 50, 51, 58, 59, 62, 63, 64, 65
• **Influence of family, friends and clinic–based health workers**	Social support, role models, knowledge, attitudes, beliefs	15, 25, 26, 30, 46, 52, 57, 74, 75, 77, 83
• **Availability of resources**	Access to information and health services, infant care support, time, money, access to drinking water	9, 10, 11, 12, 13, 14, 19, 22, 27, 36,49, 56, 76, 77
• **Physical and emotional health**	Planned pregnancy, infant health, maternal health, depression, self-confidence, self-esteem, social support	4, 5, 15, 38, 39, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85

From Table 5 it is clear that due to the inter–relatedness of variables (see conceptual framework: figure 3) that influence infant feeding practices, the response to numerous questions could be interpreted as being indicative of

more than one independent variable influencing current infant feeding pratices. An attempt was made to structure the questionnaire in such a way that it had a logical flow. Furthermore, questions of a sensitive nature such as whether the pregnancy was planned (question 80) and whether the mother opted to take an AIDS test (question 87) were deliberately included towards the end to reduce the level of possible embarrassment experienced by the respondents.

A few key questions were used as indicators of constructs such as knowledge, attitudes, perceptions, beliefs, self-confidence, self- esteem and depression. Table 6 indicates which specific questions were selected as indicators of these constructs.

Table 6: Questions that were used as indicators of measured constructs

Construct	Question
Knowledge	32,33,37,43,44,53,63,67,68
Attitude	32,33,71
Perception	48,37,52,58,61,66,73,78
Belief	43,44,52,58,59,63,65,66,73
Self-esteem	81,82
Self-confidence	81,82
Depression	14,15, 77,80,81,82,83,84,85

The above questions were selected after careful consideration of studies investigating similar constructs (Table 5) and expert consultation. To ensure meaningful interpretation of the study results, only the most important findings of this study are reported in Chapter 4. The results of the study that are not discussed in Chapter 4 can be viewed in Annexure IX.

The most serious problem related to using a survey for data collection purposes, is that it is essentially a human communication process between

the fieldworker and the respondent. This phenomenon implies that the field-worker could intervene between the intentions of the researcher and those of the respondent, equating to the interviewer-respondent effect (Leedy 1992: 187-192; Schnetler, Stoker, Dixon, Herbst & Geldenhuys 1989: 143). To overcome this obstacle, the following measures were taken:

After the questionnaire had been developed it was translated into Isizulu (Annexure II) by a registered Zulu translator, using the back translation method (Macintyre & Baloyi 2000). This entails that a translator who is fluent in both English and Zulu translates the questionnaire into Zulu. A second translator then translates the Zulu version into English. Subsequently both English versions are compared for any discrepancies. This ensures that the questions are not subject to misinterpretation by fieldworkers or the target group (WHO 2004: 9). In addition, the fieldworkers were trained and a pilot study was conducted.

The final questionnaire used in this study contained 87 open– and close–ended questions (Annexure I).

3.5 Fieldworker recruitment and training

Eight female fieldworkers who were fluent in English and Zulu with a mean age of 23,2 years (minimum age 21 years, maximum age 27 years) were recruited from the senior student core of the Department of Food Marketing and Management, Durban Institute of Technology, to conduct the interviews with Zulu mothers. The mean age of respondents who were interviewed for this study was 25,6 years (minimum age 18 years, maximum age 43 years). According to Schnetler et al. (1989: 143) the image that the respondent has of the interviewer influences her responses. As a result, interviewer characteristics such as gender, age and social status do not automatically

influence the outcome of an interview, but first impressions based on emotional reactions do. However, Floyd and Fowler (1993: 110) is of the opinion that age, education and gender of the interviewer have seldom been associated with data quality. For the purpose of this study it was therefore assumed that the age difference between fieldworkers and respondents did not influence the study results.

Each fieldworker had Nutrition as a major subject for a minimum of three years. Three of the fieldworkers had Food Communication as a subject during their pre–diploma years of study. This meant that they had experience in conducting consumer–related surveys. The above, however, is not necessarily an advantage. According to Floyd and Fowler (1993: 110), having interviewers who are knowledgeable about the subject matter is seldom a plus. The reason is that knowledgeable interviewers may assume they know what the respondent is saying when the respondent has not been clear, thereby reading more into what the individual is saying than people who are not trained in the area would have. Floyd and Fowler (1993: 110) continues by saying that unless interviewer observations or ratings requiring an extensive specialized background are needed, a trained interviewer with no special background usually is the best choice. In order to address these issues, fieldworkers who had a good nutrition background were trained over a two-day period (training mannual Annexure III) to conduct the interviews with Zulu mothers in their indigenous language. According to Welman and Kruger (1999: 95), fieldworker training ensures that more accurate data are being collected. Floyd and Fowler (1993: 111) adds to these sentiments by stating that the key to building a good interviewing staff is good training and careful supervision. However, due to the fact that the researcher is not fluent in Zulu, responses had to be recorded in English.

For the above reasons, eight female fieldworkers were trained. The objectives of the training session were the following:

Fieldworkers had to:

(1) understand the importance of the study, as well as its purpose and objectives;

(2) understand their role in the data collection process as well as the qualities of a good fieldworker;

(3) understand the processes involved in conducting a survey as well as the general procedure involved in questionnaire administration;

(4) understand the procedure involved in sampling the appropriate respondent; and

(5) gain experience in administering the questionnaire in Zulu and recording responses in English in a consistent, accurate way.

The practical part of the training programme gave fieldworkers the opportunity to conduct face-to-face interviews with members of the target group in a non-clinic settting. Firstly, a member of the target group was interviewed in English by the researcher while fieldworkers had to record the response to the questions on an English version of the questionnaire. This gave fieldworkers an opportunity to familiarize themselves with the questionnaire. Subsequently the responses recorded by the researcher and those recorded by the fieldworkers were compared and any discrepancies discussed with fieldworkers. The researcher also discussed the recorded responses with the respondent to determine whether the recorded responses were an accurate reflection of the respondent's opinion and whether any questions were difficult to understand.

The next interview was conducted by randomly assigning one of the eight fieldworkers to interview another respondent using the English version of the questionnaire while all the fieldworkers also had to record the responses on an English version of the questionnaire. Responses recorded by fieldworkers were compared to those recorded by the researcher and discrepancies were

discussed with the fieldworkers. Fieldworkers were also given the opportunity to evaluate the interviewing technique that was used by the fieldworker who conducted the interview with the English version of the questionnaire. Aspects that were evaluated included body language of the interviewer and whether enough emphasis was placed on clarifying a question when it was called for. The recorded responses were also discussed with the respondent to determine whether the recorded responses were an accurate reflection of the respondent's opinion and whether any questions were difficult to understand.

Fieldworkers were then given the Zulu version of the questionnaire for perusal, based on the experience they had in dealing with the English version of the questionnaire. Suggestions made by fieldworkers were recorded and brought to the attention of the initial Zulu translator so that the necessary changes could be made prior to conducting training with the Zulu version of the questionnaire the following day.

The second training day commenced with a trained AIDS counsellor conducting a training session on interviewing skills. Subsequently two new respondents were interviewed by two randomly selected fieldworkers using the Zulu version of the questionnaire while recording the interview responses on an English version of the questionnaire. After each interview, the researcher facilitated a group discussion amongst fieldworkers in order to determine whether there were any discrepancies between recorded responses. At this stage of the training session it was stressed that all questions posed to respondents should be posed as open–ended questions. In the event of a response being difficult to interpret or in the case of open–ended questions, the exact words of the respondent should be recorded in English for interpretation by the researcher. This practice is in accordance with the suggestion made by Neuman (1997: 257).

Open–ended questions were coded by the researcher after the entire survey (N=300) had been completed. A new code was awarded to every response, even if it differed only slightly from a similar response. Once the responses to open-ended questions had been entered into the data base, they were printed out and collapsed in order to group similar response categories together. This was done to limit the amount of variables for each open–ended question and to facilitate statistical analysis (section 3.8).

3.6 Pilot study

The questionnaire was tested in a pilot study representing 5% of the total sample size (n = 15) prior to implementation in the field. Piloting was conducted in a clinic (Point Road Clinic) that did not form part of the sampled clinics cited in Table 4. Fieldworkers who had not had an opportunity to interview a respondent during the two-day training session had to ensure that they interviewed a minimum of two respondents during this phase. This meant that after pilot testing was completed, all fieldworkers had interviewed a minimum of two respondents.

The WHO (2004: 10) explains that the purpose of piloting is to check for interview flow, question clarity and missing or inappropriate information. In addition to the above, piloting was also used to identify redundant questions.

Due to the fact that the questionnaire had already been used to interview four respondents during the training session, minimal changes to the questionnaire were required after pilot testing was completed.

3.7 Data collection

Interviews with mothers took place in a consulting room where possible, or in a secluded area away from other mothers or nursing staff, with one fieldworker and one respondent per consulting room or allocated area. The average interview duration was 30 to 40 minutes. Mothers were interviewed on their infant feeding practices during the seven days prior to the interview date. Every questionnaire was checked for completeness, clarity and whether the respondent met the criteria of the target population immediately after it was handed in to the researcher. This procedure was made possible by the fact that the researcher was on site at the time that interviews took place throughout the data collection period.

To faciltate accurate recall of information relating to the infant's intake of breast milk, formula, other liquids and solids (questions 41, 42, 44 of survey questionnaire), mothers were shown colour pictures of various infant formulas, infant cereals and infant foods. This was done because Neuman (1997: 237) explains that one's ability to recall declines over time. Moreover, respondent recall can be aided by allowing extra thinking time, fixed time frame or location references.

3.8 Data capturing, processing and statistical analysis

All data generated by this study were captured and cleaned using the Statistical Package for Social Sciences (SPSS) computer package Version 11.0 (SPSS, Chicago, USA). To facilitate data capturing and analysis, publications by Kirkpatrick and Feeney (2001) and Pallant (2001) were consulted.

Statistical analysis of the data involved the following:

- Evaluation of the difference between PMTCT and non–PMTCT groups for a number of categorical and continuous variables
- Determination/identification of significant predictors of exclusive breastfeeding for the PMTCT and non–PMTCT groups.

3.8.1 Differences between the PMTCT and non–PMTCT groups

In order to determine the difference between the PMTCT and non–PMTCT groups, the following variables were subject to statistical analysis:

Categorical variables analysed in the contingency tables included the number of years mothers spent in school and the number of mothers who worked, had a say in income expenditure, had a known income that fell below the poverty line, had a source of drinking water inside the house, as well as the number of mothers that fell into the various infant feeding categories.

For categorical variables, frequencies were tallied and categories were further collapsed where possible. A Pearson's Chi–square test was done with clinic type as classification variable to determine whether the profiles for each clinic for the responses to questions differed significantly (Saunders, Lewis & Thornbill 2000: 358).

Continuous variables that were included in the statistical analyses included the following:

- mother's age;
- infant's birthweight;
- age at which other foods and/or liquids were given to infants;

For continuous variables, the mean ± SD was computed to facilitate comparison between groups using the independent samples t-test. This test is used when a quantifiable variable can be divided into two distinct groups using a descriptive variable in order to assess whether or not these groups are significantly different (Sauders et al. 2000: 361).

Data on current infant feeding practices were used to assign infants to one of four infant feeding categories. These categories included the following: (1) exclusive breastfeeding, (2) predominant breastfeeding, (3) mixed feeding and (4) formula feeding (definition of terms section 1.4). A study conducted by Aarts et al. (2000) used a similar method to allocate respondents to separate infant feeding categories.

3.8.2 Identification of significant predictors of exclusive breastfeeding

According to Neuman (1997: 319), multiple logistic regression sets out to predict whether an event will or will not occur, as well as to identify the variables useful in making the prediction. However, the dependent variable can have only two values. Therefore it was decided to use multiple logistic regression to determine the predictors of exclusive breastfeeding in the study sample. In order to facilitate this statistical procedure, data were grouped in such a way that the infant feeding categories (dependent variable) were converted into a binary category (exclusive breastfeeding versus all other

feeding categories) for the PMTCT– and non– PMTCT groups. Where possible, independent variables were also converted into binary categories. Where it was not possible, the baseline category was chosen as the category with the lowest proportion of the dependent variable. Continuous variables were also converted into binary categories. The category which was referred to as positive exposure, was related to the variables conducive to exclusive breastfeeding (Tables 19 and 20).

According to Neuman (1997: 319), the parameters of the multiple logistic regression model are estimated using the maximum–likelihood method. This implies that the variables most likely to contribute to the observed results are selected for inclusion into the model. As a result, independent variables were chosen for inclusion in the model by cross-tabulating each variable with the dependent variable, while stratifying for clinic type (PMTCT versus non–PMTCT clinics). Significant associations between variables were assessed using Pearson's chi–square test. Significant variables were then included into the multiple logistic regression model. Backward elimination based on likelihood ratios was used to construct the final model.

The results of multivariate logistic regression yield odds ratios. If the odds ratio is larger than 1, the factor would increase the odds of a positive outcome. If the odds ratio is less than 1, the factor would decrease the odds of a positive outcome (SAS Institute Inc. 1992, p467).

In order to facilitate data interpretation, odds ratios were interpreted as an indication of how many times more likely the outcome would be in the exposed category relative to the unexposed (baseline) category. Also, 95% confidence intervals were examined to facilitate interpretation of the odds ratios.

3.9 Reliability and validity of data

3.9.1 Validity of data

According to Coertze and Heath (1999: 27) and Leedy (1992: 27), validity is concerned with the soundness or effectiveness of the measuring instrument. It therefore looks at the end results of measurement and determines whether the researcher is measuring what he or she thinks is being measured.

Leedy (1992: 27) explains that face validity is dependent on the expert judgement of the researcher. It is therefore up to the researcher's judgement to decide: (1) Is the instrument measuring what it is supposed to measure? and (2) Is the sample being measured adequately representative of the behaviour or trait being measured? As a result, face validity of the questionnaire was ensured (i) by compiling a comprehensive theoretical framework on which the development of the questionnaire was based (figure 3) and (ii) by ensuring that it adequately measured the objectives identified for this study (Table 5).

According to Leedy (1992: 27), content validity is the accuracy with which an instrument measures factors or situations under study. In this study, content validity was ensured by expert review of the questionnaire (section 3.4.1) used to interview Zulu mothers. Construct validity determines the extent to which the construct (or theory) is being measured by a particular instrument. Construct validity was ensured by clearly defining the different infant feeding practices on which data analysis was based (section 1.4).

3.9.2 Reliability of data

A reliable scale or instrument produces more or less the same results every time it is applied (Coertze & Heath 1999: 26). Therefore the same results can be expected even when different persons apply the instrument (Welman & Kruger 1999: 143). Furthermore, reliability is related to the accuracy of a particular measurement: if it is not accurate, it is not reliable (Coertze & Heath 1999: 26). Reliability of the questionnaire used in the current study was ensured by training the fieldworkers (section 3.5), pilot testing the questionnaire (section 3.6), providing fieldworkers with clear instructions which formed part of each survey questionnaire (Annexure I and II), posing the questions clearly and unambiguously in the indigenous language of the respondents (Annexure II), checking the reported birth weights against the date of birth on the infant's Road To Health Card (question 1 of the survey questionnaire) and by ensuring that numerous items in the questionnaire measured the same construct (Table 5). Completed questionnaires were also checked by the researcher (section 3.7). The reliability of the dietary intake data was enhanced by providing fieldworkers with visual aids to facilitate accurate data collection.

3.10 Ethical considerations

Permission to access the selected clinics was obtained from the Director: Health, Ethekwini Municipality (Annexure V) and the Superintendent–General: Department of Health KZN (Annexure VI). Ethical approval was obtained from the Ethics Committee, Nelson Mandela Medical School, University of KwaZulu-Natal (Annexure IV (i) and (ii)). The reason the survey questionnaire received ethics approval on two separate occasions was that initially the survey had only been limited to non–PMTCT clinics. However, after the Health Systems Trust (HST) had been approached for funding, it was recommended that PMTCT clinics should also form part of the study. In

order to monitor the coverage on the PMTCT programme, the HST requested the inclusion of additional questions (e.g. question 86 and 87) into the survey questionnaire.

Individuals sampled for this study were subject to voluntary participation and were guaranteed confidentiality and anonymity. As a result, the respondent's name and surname were not recorded on the survey questionnaire, but each individual was awarded a code for identification purposes (Annexure I). Respondents were interviewed after they had signed an informed consent form. After the interview, the mothers received a food hamper to the value of R25 and an information sheet in Zulu explaining the purpose of the study (Annexure VI and VII). Respondents were not informed about the food hamper when consent was obtained.

CHAPTER 4

RESULTS AND DISCUSSION

For the purpose of this study, a questionnaire with 87 open– and close–ended questions was developed to document the infant feeding practices of mothers attending PMTCT and non–PMTCT clinics. An attempt was also made to gain insight into some of the factors that shaped the infant feeding decisions of the target group. As a result, the amount of data collected turned out to be vast in both scope and magnitude (section 6.2: Recommendations for future research). In order to facilitate the interpretation of the most important factors that shaped the infant feeding practices of this target group, only the most significant findings are reported in Chapter 4. However, to ensure completeness of the data set, variables that did not form part of the report and discussion in this chapter can be viewed in Annexure IX. For the purpose of this study, results concerning the two clinic groups are reported separately and results showing differences between the two clinic groups are highlighted. Where a wide range of responses was obtained for certain open–ended questions, only the most significant responses are reported.

4.1 Socio–demographic characteristics of mothers and their infants attending PMTCT and non–PMTCT clinics

4.1.1 Results and discussion

The most important socio–demographic characteristics describing the Zulu mothers who were interviewed in this study are summarized in Table 7. Table 8 provides an overview of characteristics describing the infants who formed part of this study.

Table 7: Socio–demographic characteristics of mothers attending PMTCT and non– PMTCT clinics (mean ± SD and column %)

Descriptor	Non–PMTCT Clinics (N = 150)	PMTCT Clinics (N = 150)	P- value
Mean age (years)	25,71 (SD 5,387)	25,51 (SD 5,541)	0,752§
% of mothers with previous children	48,0% (n = 72)	57,3% (n = 86)	0,105¶
Completed level of education • None • Primary school • Secondary school • Tertiary education	 2,0% (n = 3) 9,3% (n = 14) 71,3% (n = 107) 17,3% (n = 26)	 1,3% (n = 2) 11,3% (n = 17) 81,35% (n = 122) 6,0% (n = 9)	0,021¶
% of working mothers*	14,7% (n = 22)	10,0% (n = 15)	0,219¶
% having a say in income expenditure*	60,0% (n = 90)	36,7% (n = 55)	0,000¶
% of mothers with a known income*	39,4% (n = 59)	55, 4% (n = 83)	0,832¶
% of mothers with a known income that falls below the poverty line	81,4% (n = 48)	39,8% (n = 33)	0,912¶
Source of drinking water • Tap in house • Outside source	 74,7% (n = 112) 25,3% (n = 38)	 45,3% (n = 68) 54,7% (n = 82)	0,000 ¶

* % yes reported, the remainder no

§ Independent samples t- test

¶ Pearson's Chi-square test

Table 8: Characteristics of infants attending PMTCT and non–PMTCT clinics (mean ± SD and column %)

Descriptor	Non–PMTCT Clinics (n = 150)	PMTCT Clinics (n = 150)	P - value
Infant gender:			
• Male	42,0% (n = 63)	38,7% (n = 58)	0,556¶
• Female	58,0% (n = 87)	61,3% (n = 92)	
Mean birthweight (kg)	3,090 (SD 0,54199)	3,0889 (SD 0,56934)	0,975§
% low birthweight (< 2,5 kg)	8,0% (n = 12)	11,3% (n = 17)	0,329¶

¶ Pearson's Chi-square test

§ Independent samples t-test

The above results suggest that the Zulu mothers sampled for this study had a mean age of 25 years and they had a predominantly secondary school level of education. About half of the mothers sampled from both clinic groups had other children. In both clinic groups, the majority of mothers were unemployed. Mothers attending PMTCT clinics were significantly more inclined to have no say in income expenditure and no tap water in the house than those attending non–PMTCT clinics. For mothers from both clinics most of the water from outside the home was from a public tap or bought water. Only 2% of the households used water from rivers or streams or dams or rain water.

Of those mothers with a known household income, more mothers attending non–PMTCT clinics reported to have an income that fell below the poverty line. Due to the fact that fewer respondents recruited from the PMTCT clinics (39,4%) as opposed to non–PMTCT clinics (55,3%) knew what the household income was at the time of the study, it was problematic to compare the two clinic groups in terms of the percentage of respondents living below the poverty line (< R1000/household of four people) (De Castro & Hirschowitz 2003).

The results in Table 8 show that the infants recruited from both clinic groups did not differ significantly in terms of their gender distribution, mean birthweight or the percentage of infants that were born with a birthweight of less than 2,5kg.

4.2 Current infant feeding practices of mothers with 0 – 6 month old infants attending PMTCT and non–PMTCT clinics

4.2.1 Results

The classification of the current infant feeding practices of the Zulu mothers and how these practices related to the age category of the infant at the time of the study are described in Tables 9 - 11. The infant feeding practices describe how the mothers fed their infants in the week (seven days) prior to the survey. Overall, one quarter of the mothers at the non–PMTCT clinics and one third of the mothers at the PMTCT clinics were practising exclusive breast- feeding at the time of the survey. The trend depicted in Table 9 was that mothers attending PMTCT clinics were more inclined to breastfeed their infants exclusively or to formula feed than mothers attending non–PMTCT clinics.

Table 9: Colunm % of current infant feeding categories by PMTCT and non – PMTCT clinics (infants aged 0 – 6 months)

Feeding category	Non–PMTCT Clinics (N = 150)	PMTCT Clinics (N =150)	Pearson Chi–square p-value
Exclusive B/F	24,0% (n = 36)	34,0% (n = 51)	0,088
Predominant B/F	14,0% (n = 21)	8,7% (n = 13)	
Mixed feeding	49,3% (n = 74)	40,7% (n = 61)	
Formula Feeding	12,7% (n = 19)	16,7% (n = 25)	

The difference in exclusive breastfeeding rates between mothers at the two groups of clinics was seen particularly in the younger infants (0 - < 6 weeks) and the older infants (14 weeks - < 6 months) as shown in Tables 10 and 11. The rates of exclusive breastfeeding were 64% for infants aged 0 - < 6 weeks whose mothers were attending the PMTCT clinics, and 41% for the group attending the non–PMTCT clinics.

Table 10: Column % of current infant feeding categories by infant age category for PMTCT clinics (N = 150)

Feeding category	0 – < 6 weeks (n = 50)	6 weeks – < 14 weeks (n = 58)	14 weeks – < 6 months (n = 42)	Total (N = 150)	Pearson Chi–square p-value
EBF	64,0% (n = 32)	25,9% (n = 15)	9,5% (n = 4)	34% (n = 51)	0,000
Mixed feed	18,0% (n = 9)	50,0% (n = 29)	54,8% (n = 23)	40,7% (n = 61)	
Formula feed	10,0% (n = 5)	13,8% (n = 8)	28,6% (n = 12)	16,7% (n = 25)	
Predominant BF	8,0% (n = 4)	10,3% (n = 6)	7,1% (n = 3)	8,7% (n = 13)	

Table 11: Column % of current infant feeding categories by infant age category for non–PMTCT clinics (N = 150)

Feeding category	0 – < 6 weeks (n = 49)	6 weeks – < 14 weeks (n = 63)	14 weeks – < 6 months (n = 38)	Total (N = 150)	Pearson Chi–square p-value
EBF	40,8% (n = 20)	25,4% (n= 16)	0% (n =0)	24,0% (n = 36)	0,000
Mixed feed	20,4% (n = 10)	52,4% (n = 33)	81,6% (n = 31)	49,3% (n = 74)	
Formula feed	10,2% (n = 5)	12,7% (n = 8)	15,8 % (n = 6)	12,6% (n =19)	
Predominant BF	28,6% (n = 14)	9,5% (n = 6)	2,6% (n = 1)	14,0% (n = 21)	

The results depicted in Tables 10 and 11 show a significant decline in exclusive breastfeeding (EBF) and predominant breastfeeding with increasing infant age in both clinic groups. The opposite holds true for mixed feeding and formula feeding in that infants were more likely to be mixed fed or formula fed with increasing age. In both clinic groups, exclusive breastfeeding was the feeding method of choice in the 0 - < 6 week age category while a preference for mixed feeding was shown in the 6 - < 14 week category. The latter trend persisted in the 14 week to < 6 month age

category. This trend is consistent with the infant feeding practices reported in Table 9 where retrospective data are reported.

Table 12 provides an overview of factors that possibly influenced the breastfeeding-related practices of the study sample.

Table 12: Breastfeeding–related practices of Zulu mothers attending PMTCT and non–PMTCT clinics (mean ± SD and column %)

Descriptor	Non–PMTCT Clinics (N = 150)	PMTCT Clinics (N = 150)	P-value
% of study infants where breastfeeding was stopped*	11,1% (n = 15)	7,1% (n = 10)	
% of mothers who breast fed that were shown how to breastfeed*	60,5% (n = 89)	76,5% (n = 114)	0,003 ¶
% of mothers who felt the infant was satisfied after breastfeeding*	69,9% (n = 100)	69,5% (n = 98)	0,211¶
% of mothers who practised demand feeding*	69,4% (n = 100)	68,1% (n = 96)	0,804¶
% of mothers who introduced breastfeeding immediately after birth*	49,7% (n = 72)	60,7% (n = 85)	0,252¶
% of infants who sucked a pacifier*	19,3% (n = 29)	14,7% (n = 22)	0,282¶
% of mothers who gave food and/or liquids in addition to breast milk*	75,4% (n = 107)	67,4% (n = 95)	0,138¶
Mean age (weeks) at which other foods/ liquids were given in addition to breast milk	5,83 (SD 5.180)	6, 91 (SD 5,332)	0,144§

* % yes reported, the remainder no

§ Independent samples t- test

¶ Pearson's Chi–square test

The above results clearly show that the initiation rates and duration of continued breastfeeding were high. In addition, most mothers had been shown how to breastfeed; felt that the baby was satisfied after breastfeeding; practised demand feeding and introduced breastfeeding immediately after birth. However, the prevalence of supplementary feeding was high and the

mean age at which this practice occurred was very young (six to seven weeks).

The results reported in Table 13 give an indication of the percentage of mothers who received information about formula feeding and received free formula.

Table 13: Column % of formula–related infant feeding practices by PMTCT and non–PMTCT clinics

Descriptor	Non- PMTCT Clinics (N = 150)	PMTCT Clinics (N = 150)	Pearson Chi–square p–value
% of mothers who received information about formula feeding*	27,3% (n = 41)	42,3% (n = 63)	0,007
% of mothers who received free formula from clinic*	2,7% (n = 4)	8,7% (n = 13)	0,025
% of mothers who were shown how to make a bottle*	19,5% (n = 29)	22,1% (n = 33)	0,568

* % yes reported, the remainder no

Respondents attending PMTCT clinics were significantly more likely to receive information on formula feeding and were more likely to receive free formula from the clinic than those attending non–PMTCT clinics. Almost a fifth of the mothers attending both clinic groups were shown how to make a bottle.

4.2.2 Discussion

The findings from this study suggest that in these two clinic groups, the incidence of exclusive breastfeeding was higher in both, compared to results reported by the South African Demographic and Health Survey (1998: 134) and studies conducted in rural KwaZulu-Natal (Bland et al. 2002; Faber et al. 1997). Trends in infant feeding patterns were also observed in both PMTCT and non–PMTCT clinics in that there was a higher incidence of exclusive

breastfeeding (EBF) and predominant breastfeeding amongst mothers with younger infants with a decline in exclusive breastfeeding and predominant breastfeeding with increasing infant age. This was coupled to a concomitant increase in the incidence of mixed feeding and formula feeding with increasing infant age. This is a trend similar to what was reported by the South African Demographic and Health Survey (1998: 134).

4.2.2.1 Prevalence of exclusive breastfeeding

An important part of describing infant feeding practices is the description of the prevalence of exclusive breastfeeding rates. Aarts et al. (2000) describe the need to differentiate between "current status" data on exclusive breastfeeding (normally derived from 24-hour recalls) and data on "exclusive breastfeeding from birth" (using data from prospective longitudinal studies) which are rarely recognized. These authors found a 40% difference in exclusive breastfeeding rates at two and four months using these two indicators in the same cohort of mother–infant pairs. Thus it is very important to take cognisance of the methods used to collect data on exclusive breastfeeding rates when comparing different studies.

The methods used in the current study included a 7-day recall to determine the current status of exclusive breastfeeding. Retrospective data were also collected to determine rates of exclusive breastfeeding since birth. To facilitate the interpretation of data, only studies with a similar study design were consulted.

The results on the current prevalence of exclusive breastfeeding from this survey show a higher prevalence rate than the national data from the South African Demographic and Health Survey (1998: 134). These data were also based on cross-sectional data on current, exclusive breastfeeding rates. The

prevalence of exclusive breastfeeding in the 0 – 3 month age category reported by the South African Demographic and Health Survey (1998: 134) is 10%. This figure is lower than the 32,1% and 43,5% reported for non–PMTCT and PMTCT clinics respectively when data for infants aged 0 – 14 weeks are pooled. These results could be related to increased efforts to increase exclusive breastfeeding (e.g. the Baby Friendly Hospital initiative) and suggest a positive impact of the INP. It could possibly be explained by the fact that the Demographic and Health Survey was conducted amongst all population groups, that it explored broader levels of socio–economic status and the fact that data on exclusive breastfeeding rates were not separated according to province to facilitate comparison with other similar studies.

However, results from rural KwaZulu-Natal (Faber et al. 1997) indicate that the average age at which solid foods were introduced was 2,9 months, but that boiled water was introduced to 78,3% of infants in the 0 – < 3 month age category. This could be interpreted as an exclusive breastfeeding rate of only 21,7%, which is also lower than the findings of the current survey. However, caution needs to be exercised in comparing results from the study by Faber et al. (1997), due to the fact that the concept "exclusive breastfeeding" was not clearly defined.

A more recent study on infant feeding practices was conducted in a rural area of KwaZulu-Natal by Bland et al. (2002). The cross–sectional component of this study reported that 36% of infants aged 0 – 12 weeks had been exclusively breastfed in the past 24 hours. This figure is similar to the figures found in the current study (Tables 10 and 11). As a result, these data sets from rural KwaZulu-Natal also indicate a higher prevalence of exclusive breastfeeding than those reported by the South African Demographic and Health Survey (1998: 134).

4.2.2.2 Infant feeding practices in PMTCT clinics in comparison to those in non–PMTCT clinics

For this study, the observed trend was that mothers attending PMTCT clinics were more inclined to breastfeed exclusively or formula feed their infants when compared to mothers attending non–PMTCT clinics. This is in line with the global infant feeding policy and what is promoted at PMTCT clinics.

The observed trends for a higher percentage of mothers at PMTCT clinics introducing breastfeeding immediately after birth, the lower percentage of mothers introducing food and/or liquids in addition to breast milk, the later introduction of foods and liquids in addition to breast milk and the higher percentage of respondents who were shown how to breastfeed amongst respondents recruited from PMTCT clinics, could be indicative of the impact of the PMTCT programme and the Baby Friendly Hospital situated in Umlazi from where the majority of respondents were recruited.

A further indicator of the possible impact of the PMTCT programme is that mothers attending PMTCT clinics were more likely to have received information about formula feeding. The small difference between the two clinic groups in terms of whether they were shown how to make a bottle indicates that more attention should be given to the practical implementation of formula feeding at PMTCT clinics.

Although these are signs of a positive impact of the PMTCT programme, it should be noted that the mean age at which liquids and/or solids were introduced in addition to breastmilk was very young at both groups (5,83 weeks versus 6,91 weeks for non–PMTCT and PMTCT clinics respectively).

Although there was a noticeable increase in formula feeding amongst infants aged 14 weeks to < 6 months attending PMTCT compared to non–PMTCT clinics, the difference in the incidence of formula feeding between the two clinic groups was not as large as expected. It is possible that constraints concerning formula feeding could explain these results. One of these constraints could be a lack of tap water in the house which could make formula feeding an unsuitable choice for mothers attending PMTCT clinics. Another possibility as is suggested by Basset (2000) and Coutsoudis (2000) is a fear of stigmatization resulting from formula feeding in a community where breastfeeding is the norm. The concerns raised by the above authors are justified, as a study conducted by Manuela de Paoli, Manongi and Klepp (2004) where pregnant women in Tanzania were questioned about the acceptability of feeding alternatives available to HIV-positive women expressed great concern for the social consequences of not breastfeeding. In focus group discussions conducted with the above study sample, social barriers to replacement feeding that were identified included possible lack of support from partners and potential negative reactions from the community.

Another finding that could possibly be explained a fear of stigmatization is that none of the mothers attending PMTCT clinics who formula fed at the time of the study cited Pelargon when they were asked what type of formula they were using (Annexure IX question 41B).

However, it should be noted that the PMTCT programme was implemented in June 2001 (Moodley 2002) and this study was conducted during November and December of 2002. Although positive trends in infant feeding practices were observed, it is possible that statistically significant differences would only become apparent once the programme has been running for an extended period of time. Authors such as Cerqueira and Olson (1995: 64) state that significant behavioural changes cannot even be expected in programmes that have been running for as long as four years. However, it is

important to note the positive trends in infant feeding choices at the PMTCT clinics, particularly in relation to higher levels of exclusive breastfeeding among younger infants and lower levels of mixed feeding amongst older infants when compared to infants from non–PMTCT clinics.

4.3 Indicators of knowledge, attitudes, perceptions and beliefs regarding current infant feeding practices of mothers attending PMTCT and non–PMTCT clinics

4.3.1 Results

The results of a number of selected variables concerning knowledge, attitudes, perceptions and beliefs of Zulu mothers regarding infant feeding are presented in Tables 14 and 15.

Table 14: Antenatal clinic attendance and nutrition education received in antenatal and postnatal phase by mothers attending PMTCT and non–PMTCT clinics (mean ± SD and column %)

Descriptor	Non-PMTCT Clinics (N = 150)	PMTCT Clinics (N = 150)	P-value
Frequency of antenatal clinic attendance by mothers (times/pregnancy)	8,33 (SD 2,346)	7,45 (SD 2,478)	0,002 §
% of mothers making use of clinic during pregnancy *	93,0% (n = 140)	96,7% (n = 145)	0,185 ¶
% of mothers receiving ante–natal nutrition education*	56,7% (n = 85)	66,7% (n = 100)	0,107 ¶
% of mothers receiving postnatal nutrition education*	42,3% (n = 63)	52,7% (n = 79)	0,072 ¶

* % yes reported, the remainder no

§ Independent samples t- test

¶ Pearson's Chi-square test

Table 15: Knowledge, attitudes, perceptions and beliefs regarding current infant feeding practices of mothers attending PMTCT and non–PMTCT clinics (mean ± SD; and column % and frequency %)

Descriptor	Non-PMTCT Clinics (N = 150)	PMTCT Clinics (N = 150)	P– value
Mothers' opinion on mean age (in months) at which food and/or liquids in addition to breast milk should be given	3,91 (SD 1,842)	4,95 (SD 2,895)	0,002 §
% of mothers cleansing infant's stomach*	50,7% (n = 76)	47,3% (n =- 71)	0,564 ¶
Ingredients used to cleanse infant's stomach: • Harmful ψ ingredients • Harmless ψ ingredients	 84,2% (n = 64) 15,8% (n = 12)	 63,4% (n = 45) 36,6% (n = 26)	 0,004 ¶
Main reason for breastfeeding study infant: • Health • Breast is best • Nutritious	 41,1% (n = 58) 20,6% (n = 29) 9,2% (n = 13)	 53,3% (n = 72) 11,1% (n = 15) 8,1% (n = 11)	 #
Main reason for giving study infant something other than breast milk: • Hungry baby • Baby cried a lot • Milk too little /weak	 59,3% (n = 64) 9,3% (n = 10) 8,3% (n = 9)	 62,5% (n = 55) 3,4% (n = 3) 2,3% (n = 2)	 #
Main reason for infant's crying: • Hungry baby • Wet baby • Wants to be picked up	 72,7% (n = 109) 11,3% (n = 17) 6,7% (n = 10)	 68,7 % (n = 103) 16,0% (n = 24) 6,7% (n = 10)	 #

* % yes reported, the remainder no

ψ Harmful ingredients: Umuthi wenyoni, milk of magnesia, Sunlight water, castor oil, herbs

ψ Harmless ingredients: Water, sugar water, fruit juice, tea, warm milk

\# No p–values, open–ended questions

§ Independent samples t-test

¶ Pearson's Chi-square test

The frequency of antenatal clinic attendance reported was eight and seven visits before the infants' birth for mothers attending non–PMTCT and PMTCT clinics respectively, although the attendance of non–PMTCT clinics was significantly higher than that of PMTCT clinics. More than half of the mothers in both groups did receive antenatal and postnatal nutrition education with mothers attending PMTCT clinics being more inclined to have received antenatal and postnatal nutrition education.

The most important reasons cited for breastfeeding were: health, the generic term "breast is best" and that breast milk is nutritious. The perceived ideal age for the introduction of food and/or liquids in addition to breastmilk was significantly higher in the PMTCT group than in the non–PMTCT group.

In both clinic groups the majority of mothers cited a hungry baby as the main reason why a baby cries and why it was given something other than breast milk. The cultural belief that an infant's stomach requires cleansing was held by about half of the mothers attending both types of clinics.

4.3.2 Discussion

The percentage of mothers from both clinic groups making use of the clinic during pregnancy is similar to the 94% antenatal care by doctors/nurses reported by the South African Demographic and Health Survey (1998: 110). The average reported frequency of antenatal clinic visits per mother for both groups was eight. Because the Antenatal Technical Working Group of WHO (1994) recommends a minimum of four antenatal visits for a woman with a normal pregnancy, the attendance figures obtained for this study can be considered adequate. Furthermore, this figure is higher than the median value of 5,3 reported by the South African Demographic and Health Survey (1998: 110), the more than five times reported for Duncan Village (De Villiers

2001), the 6,4 visits recorded in Tanzania (Moller 1989) and the five visits recorded in Zambia (Ransjoy– Arvidson 1989).

It can be speculated that the slightly higher frequency of antenatal clinic attendance among non–PMTCT mothers could be due to the higher level of education recorded for them as well as a higher intra–household status as was reflected by more non–PMTCT mothers having a say in income expenditure. According to Brown et al. (1998: 112), the more educated a mother is, the better is her ability to make use of health care systems.

The most important reasons cited as to why mothers from PMTCT and non–PMTCT clinics breastfeed their infants could be seen as an indicator of appropriate knowledge regarding the benefits of breastfeeding. However, it is interesting to note that recall of the generic term "breast is best" was higher amongst non–PMTCT mothers, whereas more PMTCT mothers cited infant health as their reason for breastfeeding. This could be indicative of a more in-depth level of infant feeding education being conducted at PMTCT clinics.

The mean age of about 4 – 5 months at which both groups of mothers thought liquids and/or solids should be given to infants in addition to breastmilk is in contrast to the mean age of 6 – 7 weeks at which both groups of mothers introduced foods and/or liquids in addition to breast milk. This could illustrate the fact that knowledge is not always a good indicator of actual feeding practices, as is often reported in the literature. However, the fact that no clear distinction was made between the age at which liquids should be introduced and the age at which solids should be introduced complicates the interpretation of these results. On closer inspection of the data, it was found that none of the mothers cited water as an example of a liquid that should be given in addition to breast milk. This illustrates the fact that the mothers who were interviewed did not view water as important to

mention when discussing their infant feeding practices. However, in terms of promoting exclusive breastfeeding, the importance of discouraging mothers to give their infants water should not be overlooked in that exclusive breastfeeding ceases the moment an infant receives any food and/or liquid in addition to breastmilk.

The majority of mothers from both clinic groups cited a hungry baby as being the reason for introducing something other than breast milk into the infant's diet as well as the most important reason for infant crying. The latter results are in accordance with the results from a local study conducted by Richter (1994), a study conducted in Nigeria (Davies– Adetugbo 1997) and a study done in India (Sachdev & Mehotra 1995).

The above results, as well as the finding that a perceived lack of breast milk or weak breast milk are reasons for giving the study infant something other than breast milk, are in accordance with infant feeding beliefs reported by Theron et al. (2000); Caulfield et al. (1999); Cohen et al. (1999); Davies–Adetugbo (1997); Cohen et al. (1995); Sachdev and Mehotra (1995); Cohen et al. (1994); Richter (1994); Van Der Elst et al. 1989; Ransome et al. (1988) and Hoffman et al. (1984). However, Allen and Gillespie (2001:17) are of the opinion that when "baby is hungry", "infant crying" or "weak breast milk" are cited as reasons for introducing solids, it is often indicative of mothers with an initial lower milk production being more likely to begin with other food.

The incidence of "stomach cleansing" reported in this study is similar to that reported by Steyn et al. (1998), namely that more than 50% of the infants of mothers in the study population received a herb mixture after birth. However, in this study non-medicinal mixtures were also given as examples of preparations for what respondents referred to as " stomach cleansing". In the study conducted by Steyn et al. (1998) the purpose of the administration of the herb mixture was not clear. It would however seem that the practice

of "stomach cleansing" is not only found in South Africa. In a study conducted by Badruddin et al. (1997) in Pakistan, "stomach cleansing" was also found amongst 16% of the study population. Significantly, more mothers from non–PMTCT clinics than from PMTCT clinics used harmful ingredients (which included commercially bought preparations) for stomach cleansing. This could be indicative of the positive impact of educational efforts conducted at PMTCT clinics. However, the fact that still nearly half of the mothers from both clinic groups practised "stomach cleansing" justifies further investigation of this practice as a factor that undermines the promotion of exclusive breastfeeding.

4.4 Indicators of the influence of family, friends and clinic–based health workers on current infant feeding practices of mothers attending PMTCT and non–PMTCT clinics

4.4.1 Results

The results of a number of selected variables concerning the influence of family, friends and clinic–based health workers on infant feeding practices are presented in Table 16.

Table 16: Influence of family, friends and clinic–based health workers on current infant feeding practices by PMTCT and non–PMTCT clinics (frequency and column %)

Descriptor	Non–PMTCT clinics (N = 150)	PMTCT Clinics (N = 150)	Pearson Chi–square p–value
Predominant source of antenatal education:			
• Professional nurse	57,1% (n = 48)	57,6% (n = 57)	#
• Staff nurse	23,8% (n = 20)	30,3% (n = 30)	
• Counsellor	4,8% (n = 7)	6,1% (n = 6)	
• Mother/grand–mother	8,3% (n = 7)	2,0% (n = 2)	
Predominant source of postnatal education:			
• Professional nurse	54,7% (n = 35)	55,7% (n = 44)	#
• Staff nurse	21,9% (n = 14)	30,4% (n = 24)	
• Mother/ grandmother	7,8% (n = 5)	5,1% (n = 4)	
• Other mothers/sisters /friends	9,4% (n = 6)	3,8% (n = 3)	
Influence to give infant something other than breast milk:			
• Own decision	50,9% (n = 55)	60,2% (n = 53)	
• Mother	21,3% (n = 23)	15,9% (n = 14)	#
• Clinic staff	11,1% (n = 12)	8,0% (n = 7)	
• Sister/other relative	9,3% (n = 10)	9,1% (n = 8)	
% of mothers living with infant's father*	30,7% (n = 46)	36,7% (n = 55)	0,272

* % yes reported, the remainder no

No p – values, open – ended questions

The results show that clinic-based nursing staff are the most important source of antenatal and postnatal infant feeding education. The majority of mothers from both clinic groups said that it was their own decision to give the infant something other than breast milk. The infant's grandmother was cited as being the next most likely person to influence the decision to supplement breastfeeding with other foods and liquids. It should be noted that only one third of the mothers lived with the infant's father. No significant differences were evident between the two groups.

4.4.2 Discussion

The fact that clinic-based nursing staff are the most important source of infant feeding information both antenatally and postnatally is in accordance with the results reported by Maunder and Mthuli (1998) and underlines the important role that clinic-based staff can play in shaping appropriate infant feeding decisions. The hierarchy of potential sources of infant feeding advice reported in this study is similar to that reported by Bland et al. (2002).

Mothers reported that the decision to feed their infants something other than breastmilk was mainly their own, followed by the advice from their mother (infant's grandmother) and clinic staff. These results are contrary to the results reported by Coutsoudis et al. (1999) and Cohen et al. (1999) who indicated that where mothers introduced other food despite advice from health professionals to continue with exclusive breastfeeding, they did so because of social pressure. Bronner et al. (1999) also state that a review of various studies showed that the introduction of complementary foods was strongly influenced by social factors such as tradition, culture, family and peer pressure.

The fact that the majority of mothers from non– PMTCT and PMTCT clinics did not live with the infant's father could be the reason why the infant's father did not feature as a major role player in influencing the mother to give the infant something other than breastmilk.

4.5 Resources that influence current infant feeding practices of mothers attending PMTCT and non–PMTCT clinics

4.5.1 Results

Some of the resources that are available to mothers attending PMTCT and non–PMTCT clinics that could influence current infant feeding practices were reported in Tables 7 and 14. Only variables not included in these tables are reported in Table 17.

Table 17: Resources that influence current infant feeding practices of mothers attending PMTCT and non–PMTCT clinics (Column and frequency %)

Descriptor	Non – PMTCT Clinics (N = 150)	PMTCT Clinics (N = 150)	Pearson Chi–square p–value
% of mothers where clinic is within walking distance*	81,3% (n = 122)	78,0% (n = 117)	0,473
Mothers' main sources of infant care support:			
• Nobody	31,3% (n = 47)	28,0% (n = 42)	#
• Mother/mother –in-law	25,3% (n = 38)	32,0% (n = 48)	
• Sister/other relatives	20,0% (n = 30)	11,3% (n = 17)	
• Infant's father	7,3% (n = 11)	15,3% (n = 23)	

* % yes reported, remainder no

No p – values, open – ended question

The majority of mothers did not work (Table 7), were within walking distance of their local clinic (Table 17) and had secondary school education (Table 7), with no significant differences between the two groups. Although significantly more mothers attending non–PMTCT clinics had a source of drinking water (tap) inside the house, the majority of mothers attending PMTCT clinics had access to safe drinking water even though it was not inside the house. About one third of mothers from both clinic groups reported not having infant care

support. Of those receiving infant care support, the majority of mothers in both clinic groups cited the infant's grandmother as the main source of alternative infant care (Table 17) and about a third lived with the father of the child (Table 16). No significant differences between the two groups were found for the variables concerning infant care support.

Significantly more mothers attending non–PMTCT clinics had a say in income expenditure than mothers attending PMTCT clinics. There was no significant difference between mothers attending these two clinic groups in terms of employment status and living with the infant's father.

4.5.2 Discussion

The resources that influenced infant feeding practices included the availability of time, money, infant care support, access to safe, clean drinking water and access to health care facilities.

From a socio–demographic perspective, the majority of mothers attending non–PMTCT and PMTCT clinics had secondary school education. However, there was a significant difference between their overall level of education in that mothers attending non–PMTCT clinics were better educated because a higher percentage had obtained a tertiary level of education. According to Brown et al. (1998: 112), the more educated a mothers is, the greater her level of assertiveness, the better her ability to make use of health care systems and the higher her status within in the household. These remarks by the above authors may shed light on the fact that mothers attending PMTCT clinics were significantly less likely to have a say in income expenditure as opposed to those attending non–PMTCT clinics. The latter could be indicative of mothers attending PMTCT clinics having a lack of money that could have an impact on their infant feeding decisions. However, the fact that free infant

formula is available to HIV-positive mothers attending PMTCT clinics could be viewed as a resource which could possibly diminish the effect of lower income.

In terms of the availability of services, the majority of mothers reported that there was a clinic within walking distance from their home. Access to health services and the social support associated with it could therefore be seen as a resource available to mothers attending non–PMTCT and PMTCT clinics.

The majority of mothers were unemployed. It could therefore be speculated that they had enough time to care for their infants and take them to the clinic. Low inputs by the infant's fathers could be linked to the fact that only a third of the mothers reported that they lived with the infant's father. This could be indicative of a high number of female-headed households amongst the mothers that were interviewed in this study. However, according to De Villiers and Senekal (2002), the risk for growth failure could be increased when a child has a mother who is not the head of the household. It is therefore possible that the absence of a father need not necessarily be viewed as a lack of a social resource. However, considering the lack of perceived support from a father in the majority of mother–infant pairs, it is not surprising that the infant's grandmother was cited as the most important alternative source of infant care support by both groups.

A study conducted by De Villiers and Senekal (2002) indicates that being cared for by any person other than a child's biological mother constitutes a greater risk for a child to experience growth failure. The results of the current study that point towards the importance of involving the grandmother and other relatives in strategies aiming to improve infant feeding practices are therefore significant. Due to the fact that there was no apparent difference in the level of infant care support experienced by mothers from the two clinic

groups, the difference in the feeding practices reported in Table 9 cannot be accounted for by the level of infant care support experienced.

Considering the above results, it can be speculated that the majority of mothers from both clinic groups did not experience a major lack of resources in that they had sufficient time to facilitate adequate infant care, had access to clean, safe water (although not necessarily in the house) and adequate access to health care facilities. However, despite the fact that adequate data on household income were not available for this study, it is possible that a lower socio–economic status, as was reflected by a lack of tap water in the house and a lack of infant care support for a subsection of the sample, could be viewed as a potential factor in making inappropriate infant feeding choices.

4.6 Physical and emotional health of mothers attending PMTCT and non–PMTCT clinics

4.6.1 Results

The results of answers to selected questions used to assess the physical and emotional health of mothers are presented in Table 18.

Table 18: Column % of physical and emotional health-related variables/factors by PMTCT and non–PMTCT clinics ψ

Descriptor	Non–PMTCT Clinics (N = 150)	PMTCT Clinics (N = 150)	Pearson Chi–square p– value
% of mothers with a known income that falls below the poverty line	81,4% (n = 48)	39,8% (n = 33)	0,912
% of mothers living with infant's father*	30,7% (n = 46)	36,7% (n = 55)	0,272
Mothers' main sources of infant care support: • Nobody • Mother/mother –in-law • Sister/other relatives • Infant's father	31,3% (n = 47) 25,3% (n = 38) 20,0% (n = 30) 7,3% (n = 11)	28,0% (n = 42) 32,0% (n = 48) 11,3% (n = 17) 15,3% (n = 23)	#
% of planned pregnancies*	32,0% (n = 48)	38,7% (n = 58)	0,227
% of sick infants*	30,0% (n = 45)	38,0% (n = 57)	0,155
Emotional health			
% feeling good about themselves as a person*	96,7% (n = 145)	94,7% (n = 142)	0,395
% feeling worthwhile*	97,3% (n = 146)	98,7% (n = 148)	0,365
% receiving adequate emotional support from family and friends*	87,3% (n = 131)	84,7% (n = 127)	0,506
% satisfied with living arrangement*	90,0% (n = 135)	90,0% (n = 135)	1,000
% experiencing stress*	58,7 % (n = 88)	61,3% (n = 92)	0,637
Physical health			
% thinking they are healthy*	92,7% (n = 139)	91,3% (n = 137)	0,907

ψ Descriptors of emotional health selected from Postpartum Depression Predictors Inventory (Beck 2002)

* % yes reported, the remainder no

No p–values, open–ended question

The majority of mothers attending non–PMTCT clinics with a known income lived under the poverty line. The majority of mothers attending both clinic groups felt good about themselves, felt worthwhile, received adequate emotional support from family and friends and perceived themselves to be in good physical health. About one third of mothers from both clinic groups

lived with the infant's father, did not have infant care support, had planned their pregnancy and had a sick infant at the time of the study. No significant differences between the two groups were found for these variables.

4.6.2 Discussion

The results indicate that the majority of mothers from both clinic groups reported good levels of perceived physical health and parameters of emotional health. However, nearly two thirds experienced stress at the time of the study.

It must be borne in mind that the questions that were used to determine the emotional wellbeing of the mothers in this study were possibly not completely appropriate. Airhihenbuwa and Obregon (2000) explain that theories of health behaviour that may be effective and meaningful in a Western context, have lesser relevance for self–efficacy in cultures such as those found in Africa. According to Ellis (2003), depression can manifest in many forms in traditional Africans, for example there may not be such a strong differentiation between cognitive functions and bodily functions and symptoms as is found in Western populations. However, Dhadphale, Cooper and Cartwright–Taylor (1989) diagnosed depressive disorders in 9,2% of patients in a primary care setting in Kenya with the use of appropriate diagnostic tools. As a result, the latter findings contradict earlier reports that Africans do not admit to being depressed. Furthermore, in a local study conducted by De Villiers (2001), nearly 40% of the sample indicated that they suffered from tension and/or sleeping problems, whereas up to half of the mothers in one sub-sample reported suffering from headaches. The author also stated that it could be assumed that the incidence of headaches reflected depression to a certain extent.

Considering the findings that a third of women reported to have no infant care support, and that the majority of women attending PMTCT and non–PMTCT clinics were not living with the study infant's father at the time of the study and reported that they did experience stress, it can be speculated that if more appropriate measuring instruments/questions had been used, the presence of depression could possibly have been detected amongst PMTCT and non–PMTCT mothers. In the light of this, results reported by De Villiers and Senekal (2002) should not be ignored. The latter authors reported a higher risk for growth failure when a child had a mother who was not the head of the household. However, it cannot be accepted as a given that children who grow up in an environment where the father is present are better off, as the absence of a father was not found to be a negative factor in this study.

It is a matter of concern that only one third of mothers from both clinic groups reported that the study infant had been a planned pregnancy. According to the Postpartum Depression Predictors Inventory (Beck 2002), an unplanned pregnancy places a mother at risk for the development of postnatal depression. As a result, this aspect requires further investigation, especially as poor child spacing could have a negative impact on child care and infant feeding practices.

4.7 Predictors of exclusive breastfeeding among mothers attending PMTCT and non–PMTCT clinics

In order to gain insight into factors that could possibly serve as predictors of exclusive breastfeeding within the non–PMTCT and PMTCT groups respectively, a multivariate logistic regression model with exclusive breastfeeding as the dependent variable and the factors that could impact on this feeding option as the independent variable/predictor, was run.

4.7.1 Results

Where independent variables were categorical and consisted of more than two categories, they were converted into binary variables. For the purpose of this study, positive exposure can be viewed as variables conducive to the promotion of exclusive breastfeeding. The binary variables reported in Tables 19 for non-PMTCT clinics and 20 for PMTCT clinics yielded significant t–test – and Chi –square values. As a result they were considered to be the most important predictors of exclusive breastfeeding and were fed into the mutivariate regression model.

Table 19: Binary categories of independent variables applicable to mothers attending non– PMTCT clinics (N = 150)

Variable	Categorisation
Infant age category	Positive exposure: 0-6 weeks and 6- 14 weeks
Mother living with infant's father	Positive exposure: yes
Person who spoke to the mother antenatally	Positive exposure: doctors, nursing sister, nurse, nutrition advisor, counselor
Postnatal clinic visits	Positive exposure: yes
Who spoke to the mother postnatally	Positive exposure: doctors, nursing sister, nurse, nutrition advisor, counselor
If the mother ever breastfed, was she shown how to breastfeed	Positive exposure: yes
Did it hurt while she breastfed	Positive exposure: no
Was the infant satisfied after a breastfeed	Positive exposure: yes
Was the infant breastfed on demand	Positive exposure: yes
The time that the infant was first introduced to breast milk	Positive exposure: immediately after after birth and a few hours after birth
How additional liquids were given to the infant	Positive exposure: cup and spoon
Who spoke to the mother about formula feeding	Positive exposure: clinic staff member
Whether the mother was receiving free formula	Positive exposure: no
Whether the mother was shown how to prepare a formula feed	Positive exposure: no
Did the infant suck a pacifier	Positive exposure: no
Did the mother think feeding practices affect the infant's health	Positive exposure: yes
If the mother was not shown how to breastfeed, would she have liked to be shown	Positive expsure: yes
At the time of the study, was the mother feeding her infant the way she would have liked to	Positive exposure: yes
Mothers' source of infant care support	Positive exposure: mother/mother-in- law, grandmother, infant's father
Did the mother perceive herself to be healthy	Positive exposure: yes
Did the mother feel she was worthwhile	Positive exposure: yes
Whether the mother received adequate emotional support	Positive exposure: yes
Was the mother satisfied with her living arrangement	Positive exposure: yes
Visiting antenatal clinics 9 times or more during the pregnancy versus less than 9 times	Positive exosure: 9 times or more
Provision of breast milk immediately after birth versus later	Positive exposure: immediately after birth
Cleansing the infant's stomach with harmless versus harmful ingredients	Positive exposure: water, sugar water, fruit juice, tea, warm milk

Table 20: Binary categories of independent variables applicable to mothers attending PMTCT clinics (N = 150)

Variable	Categorisation
Infant age category	Positive exposure: 0-6 weeks and 6-14 weeks
Mother living with infant's father	Positive exposure: yes
Person who spoke to mother antenatally	Positive exposure: doctor, nursing sister, nurse, nutrition advisor, counsellor
Postnatal clinic visits	Positive exposure: yes
Who spoke to the mother postnatally	Positive exposure: doctors, nursing sister, nurse, nutrition advisor, counsellor
If the mother ever breastfed, was she shown how to breastfeed	Positive exposure: yes
Did it hurt while she breastfed	Positive exposure: no
Was the infant satisfied after a breastfeed	Positive exposure: yes
Was the infant breastfed on demand	Positive exposure: yes
The time that the infant was first introduced to breast milk	Positive exposure: immediately after birth and a few hours after birth
How additional liquids were given to the infant	Positive exposure: cup and spoon
Who spoke to the mother about formula feeding	Positive exposure: clinic staff member
Whether the mother was receiving free formula	Positive exposure: no
Whether the mother was shown how to prepare a formula feed	Positive exposure: no
Did the infant suck a pacifier	Positive exposure: no
Did the mother think feeding practices affect the infant's health	Positive exposure: yes
If the mother was not shown how to breastfeed, would she have liked to be shown	Positive exposure: yes
At the time of the study, was the mother feeding her infant the way she would have liked to	Positive exposure: yes
Mother's source of infant care support	Positive exposure: mother, mother-in-law, grandmother, infant's father
Did the mother perceive herself to be healthy	Positive exposure: yes
Did the mother feel she was worthwhile	Positive exposure: yes
Whether the mother received adequate emotional support	Positive exposure: yes
Was the mother satisfied with her living arrangement	Positive exposure: yes
Visiting antenatal clinics 9 times or more during the pregnancy versus less than 9 times	Positive exosure: 9 times or more
Provision of breast milk immediately after birth versus later	Positive exposure: immediately after birth
Cleansing the infant's stomach with harmless versus harmful ingredients	Positive exposure: water, sugar water, fruit juice, tea, warm milk

After conducting backward elimination based on likelihood ratios the variables reported in Table 21 for non-PMTCT clinics and Table 22 for PMTCT clinics were the only variables that remained in the multivariate logistic regression model.

Table 21: Variables that remained in the multivariate logistic regression model to determine the predictors of exclusive breastfeeding among mothers attending non–PMTCT clinics (N = 150)*

	Standard error	Chi - square	Degrees of freedom	P-value	Odds ratio	95,0% confidence interval for odds ratio	
						Lower	Upper
Liquids not given in addition to breastmilk	0,895	33,24	1	<0,001	174,531	30,183	1009,214
Source of drinking water outside the house (baseline = tap)	0,675	2,769	1	0,096	3,074	0,819	11,534
Infant never had stomach cleaned (baseline yes)	0,667	3,363	1	0,067	3,396	0,919	12,545

Table 22: Variables that remained in the multivariate logistic regression model to determine the predictors of exclusive breastfeeding among mothers attending PMTCT clinics (N = 150)*

	Standard error	Chi - square	Degrees of freedom	P-value	Odds ratio	95,0% confidence interval for odds ratio	
						Lower	Upper
Liquids not given in addition to breastmilk	1,157	26,735	1	<0,001	396,333	41,043	3827,224
Infant female (baseline = male)	0,721	2,613	1	0,106	3,206	0,781	13,165
Mother has not visited clinic since birth of infant (baseline = yes)	0,774	11,756	1	0,001	14,216	3,118	64,825
Infant fed on demand (versus schedule)	0,811	6,307	1	0,012	7,665	1,564	37,571
Infant does not suck a pacifier (baseline = infant sucks a pacifier)	2,446	2,717	1	0,099	56,322	0,467	6798,325
Mother currently experiencing stress (baseline = no stress)	0,771	4,305	1	0,038	4,948	1,092	22,413

Significant values were obtained for non-PMTCt and PMTCT clinics in terms of the infant not having received liquids in addition to breastmilk. Non significant predictors for both clinic groups were obtained for socio-demographic or biologic variables.

Predictors of exclusive breastfeeding for mothers attending PMTCT clinics included a highly significant value for whether the mother had not visited the clinic since the infant's birth, whether the infant was fed on demand and whether the mother was currently experiencing stress. The wide confidence intervals reported in tables 21 and 22 can be attributed to the relatively small sample size (N = 150) for both clinic groups.

4.7.2 Discussion

The definition of exclusive breastfeeding (section 1.4.1) stipulates that no liquids or solids, in addition to breast milk, should be given to an infant where the aim is to breastfeed exclusively. As a result the highly significant value obtained for both non-PMTCT and PMTCT clinics for the predictor that liquids were not given in addition to breastmilk is to be expected.

Although not significant, the strong trend of the study infant's mother having access to a source of drinking water outside the home in non-PMTCT clinics could indicate a lower level of socio–economic status. It is possible that women of a lower socio-economic status are more likely to breastfeed exclusively due to the financial burden associated with formula feeding. Data reported by Perez–Escamilla, Lutter, Segall, Rivera, Trevino–Siller and Sanghvi (1995) found that a lower socio–economic status were positively associated with exclusive breastfeeding. On the other hand, Wright et al. (2004) found that one of the strongest independent predictors of earlier age at weaning was lower socioeconomic status.

In non-PMTCT clinics a strong trend was observed in that infants who were not subjected to the practice of stomach cleansing were more likely to be breastfed exclusively. This result could be indicative of a higher level of knowledge of mothers who choose to breastfed exclusively in that they deem the cultural practice of stomach cleansing to be unnecessary. However, the latter could also be explained with reference to the definition of exclusive breastfeeding. Results discussed in section 4.3.1 showed that mothers who practice stomach cleansing are known to give their infants liquids such as water, sugar water, fruit juice, tea or warm milk.

For PMTCT clinics, the predictive value of practising demand feeding (versus feeding according to a schedule) and the absence of a pacifier are in accordance with the recommendations made by the WHO and UNICEF (WHO 2002: ii) that enable mothers to establish and sustain exclusive breastfeeding for six months. The above could indicate that mothers attending PMTCT clinics are given the knowledge and support that is necessary to implement and sustain exclusive breastfeeding. In results reported by Kramer, Barr, Dagenais, Yang, Jones, Ciofani and Jane (2001) and Vogel, Hutchison and Mitchell (2001), daily pacifier use was associated with early cessation of breastfeeding. However, Kramer et al. (2001) explain that paciefier use could be a marker for reduced motivation to breastfeed, rather than a true cause of early weaning.

In PMTCT clinics the predictive value of not having visited the clinic since the infant's birth could be interpreted as an example of possible reverse causality. According to Okasha (2005), reverse causality can be defined as the outcome causing the exposure and not vice versa. The above author further clarifies this term by explaining that the disease (outcome) cause individuals to change their behaviour (exposure). As a result it can be speculated that should mothers attending PMTCT clinics be the ones with babies that are exclusively breastfed, it could point towards the fact that infants who are

exclusively breastfed are healthier and therefore require fewer clinic visits. Furthermore, it is possible that mothers of exclusively breastfed infants received appropriate education in the antenatal period and were therefore able to implement and sustain exclusive breastfeeding. These results cannot however be explained by infant age as this was controlled for in the multivariate logistic regression model.

In order to shed further light on the above, McConnachie, Wilson, Thomson, Ross, Watson, Muirhead and Munley (2004) conducted a study to determine predictors of consultation rates in infants up to 6 months of age. Results reported by the above authors confirm the fact that breastfed infants and those with older mothers consult health professionals less often.

Reverse causality could also explain the fact that mothers attending PMTCT clinics who were experiencing stress, were more likely to breastfeed exclusively. It is possible that mothers who were experiencing stress did not reveal their HIV status to family and friends. As a result they chose to breastfeed exclusively as opposed to to formula feed for fear of stigmatization in a community where breastfeeding is the norm (Basset 2000 and Coutsoudis 2000). The predictive value of the mother's stress level can also be interpreted as the process of exclusive breastfeeding being stressful. This could be the case where peer pressure encourages the inclusion of supplementary liquids and foods into the infant's diet. The PMTCT Programme counsel HIV positive mothers on the most appropriate feeding option for their infants through a process of informed decision making (PMTCT Programme KZN 2002). Should PMTCT mothers who were experiencing stress be the ones who tested HIV positive, the origin of their stress could be centred around opting for exclusive breastfeeding due to a lack of access to piped water which deemed formula feeding an unsuitable feeding option.

It can be postulated that the trend of female infants to be exclusively breastfed in PMTCT clinics could be indicative of a cultural belief or perception that male infants require foods and/or liquids in addition to breastmilk because they are bigger or have greater nutrient needs. However, at this point in time this observation is highly speculative and requires further investigation. It should however be noted that a multivariate survival analysis conducted by Perez–Escamilla et al. (1995) documented that having a female infant was positively associated with exclusive breastfeeding. Furthermore, multiple logistic regression analysis conducted by Vogel et al. (2001) indicated that the use of a pacifier was associated with male gender.

After comparing the determinants of breastfeeding duration in four multivariate studies, Allen and Pelto (1985) found that biological variables were not strongly associated with breastfeeding duration in any of the populations studied. Of the external factors investigated, those relating to social support and advice were the most consistent predictors. So was socio-economic status with higher income and work outside the home being good predictors. The above authors also indicated that maternal attitudes and experience are of great importance when predicting breastfeeding duration.

In Michigan, USA, Quandt (1985) found that maternal education is not the strongest predictor of the duration of exclusive breastfeeding. According to this author maternal education should rather be viewed as a set of values and beliefs about infant feeding that is independent of biologically significant behaviours of actual breastfeeding. Dubois and Girard (2003) however, came to the conclusion in their longitudinal study conducted in Canada, that exclusive breastfeeding is mainly influenced by the mother's age, followed by the mother's level of education. Variables such as family income, family type and parents' working situation did not influence the duration of exclusive breastfeeding in this study. Despite the fact that the above studies were

conducted in developed countries, the observed contradiction in terms of the influence of maternal education on the duration of exclusive breastfeeding illustrates the observation made by Hector et al. (2005) as well as the lack of predictors for the current study.

Hector et al. (2005) are of the opinion that surveys investigating reasons why women stop breastfeeding provide only indirect and limited insight into the wider influences and interactions that influence their breastfeeding practices. The above authors are also of the opinion that women are unlikely to be aware of the many influences affecting their infant feeding behaviour, particularly the broader environmental and socio-cultural influences. Furthermore, women are often unable to articulate in survey responses and/or are uncomfortable reporting less socially acceptable or "mother-driven" reasons. As a result these authors tend to report more child-centred reasons such as "child not wanting the breast" or reasons beyond the mother's control, notably "insufficient milk". Hector et al. (2005) conclude that survey findings tend to highlight one particular factor or several factors as being particularly important. However, if there are sufficient factors encouraging breastfeeding, any one barrier to breastfeeding may not preclude breastfeeding. As a result, the above authors are of the opinion that a critical chain of events may lead to a woman stopping breastfeeding early.

In conclusion, factors that have been found to support or to undermine exclusive breastfeeding depend very much on the target group (Chapter 2). The limited number of predictors of exclusive breastfeeding documented in this study, especially among non-PMTCT mothers, may be explained by the fact that infant feeding behaviour is multifactorial by nature and the interaction between factors that influence feeding choice is strong. However, the limited number of predictors of exclusive breastfeeding in the study sample should also be viewed against the backdrop of a limited sample size

and relatively low percentage of exclusive breastfeeding within the study sample.

It is recommended that when designing interventions to promote exclusive breastfeeding, not only the identified predictors in this study should be considered, but also the significant variables that were fed into the multivariate logistic regression model. Hector et al. (2005) ascribes to this recommendation by stating that factors such as socio-demographic characteristics of the mother are actually "risk markers". In other words factors that indicate where the problem is occurring, but may not directly contribute to it.

CHAPTER FIVE

SUMMARY OF MOST IMPORTANT FINDINGS AND CONCLUSIONS

The WHO and UNICEF recommend that exclusive breastfeeding should be continued from birth for six months (Greiner 2001; ACC/SCN 2000: 33). As a result, one of the national goals of the Integrated Nutrition Programme (INP) is to enable all women to breastfeed their children exclusively up to about 6 months of age (Department of Health, Directorate Nutrition 1998). However, the national prevalence of exclusive breastfeeding reported in the South African Demographic and Health Survey (1998: 134) in 0 – 3 month old infants was a mere 10%.

The global consensus on the vertical transmission of HIV by breast milk (Dunn et al. 1992), lead to the recommendation by UNAIDS (1996) that women in developing countries should be given the choice of feeding method, after being counselled on the risks and benefits of breast– versus formula feeding. Since the incidence of HIV amongst women attending public antenatal clinics was estimated to be 33,5% in KwaZulu- Natal with the highest incidence being in the 20 – 34 year age category (Department of Health 2001), the implementation of the above recommendation was vitally important.

As a result, the Prevention of Mother–to–Child Transmission (PMTCT) programme was launched in KwaZulu-Natal in June 2001 (Moodley 2002) in order to provide interventions to prevent mother–to-child HIV transmission to all pregnant women in the province. Strategies forming part of the PMTCT programme include the provision of counselling on safe infant feeding practices for HIV–positive women, and the provision of a free breast milk substitute for women who decide to use it. As an alternative to formula feeding, women are given counselling on safe breastfeeding practices. As

training of nursing staff and lay counsellors (referred to as PMTCT counsellors in this study) on PMTCT- related issues is vital to the implementation of this strategy, it also forms part of the programme (PMTCT Programme KZN 2002).

This study was commenced 18 months after the implementation of the PMTCT programme in the province. It was therefore decided to determine and compare the current infant feeding practices and associated factors among Zulu mothers with 0 - 6 month old infants attending PMTCT and non–PMTCT clinics in central Durban. This would be done in order to assess whether a difference in infant feeding practices between mothers attending these two clinic groups and whether a difference existed in the related factors that could serve as an explanation for the documented feeding practices.

Overall, one quarter of the mothers with infants aged 0 – 6 months attending the non–PMTCT clinics and one third of mothers at the PMTCT clinics were practising exclusive breastfeeding at the time of the survey. The general trend was that mothers attending PMTCT clinics were more inclined to breast-feed their infants exclusively or to formula feed them than mothers attending non–PMTCT clinics. These results are in line with the global infant feeding policy (Greiner 2001; ACC/SCN 2000: 33) and what is promoted at PMTCT clinics (PMTCT Programme KZN 2002; UNAIDS 1996).

The difference in exclusive breastfeeding rates between mothers at the two clinic groups was observed particularly in the younger infants (0 - < 6 weeks) and the older infants (14 weeks - < 6 months). The rates of exclusive breastfeeding were 64% in infants aged 0 - < 6 weeks and 43,5% in infants aged 0 – 3 months if their mothers were attending the PMTCT clinics, compared to 40% and 32,1% in infants whose mothers attended for mothers attending the non–PMTCT clinics. Furthermore, there was a significant decline in exclusive breastfeeding and predominant breastfeeding with increasing infant age in both clinic groups. The opposite held true for mixed

feeding and formula feeding in that infants were more likely to be mixed fed or formula fed with increasing infant age. In both clinic groups, exclusive breastfeeding was the feeding method of choice in the 0 - < 6 week age category while a preference for mixed feeding was shown in the 6 - < 14 week category. This trend persisted in the 14 week to < 6 month age category, especially in the non–PMTCT clinics, while there was a small but pronounced increase in formula feeding amongst PMTCT mothers.

From the above data it became clear that the current prevalence of exclusive breastfeeding was considerably higher than the national data reported by the South African Demographic and Health Survey (1998: 134). Although the improved figures reported in the current study may be attributed to the implementation of the PMTCT programme, the positive trends observed in non-PMTCT clinics may also serve as an indicator that both the INP and the Baby Friendly Hospital initiative may have had a positive impact on the feeding choices mothers make.

Despite the limited duration of the PMTCT programme at the time of the study, indicators of the impact of the intervention included the findings that a lower percentage of PMTCT mothers introduced foods and/or liquids in addition to breast milk, and that a lower percentage of mothers introduced foods and liquids in addition to breast milk at a later stage of their infants' lives compared to non–PMTCT mothers. Furthermore, more mothers attending PMTCT clinics were shown how to breastfeed and were more likely to have received information about formula feeding.

Despite these indicators of a positive impact of the PMTCT programme, the mean infant age for introducing liquids and/or solids in addition to breast milk was about six weeks and the incidence of this practice was high for both groups. Furthermore, the mean infant age at which both groups of mothers thought that solids should be given was contradictory to their actual feeding

practices. These findings illustrate the fact that knowledge is not always a good indicator of actual feeding practices.

The small difference in the incidence of formula feeding observed between the two clinic groups suggests the possible presence of constraints to safe infant feeding choices in PMTCT clinics, such as access to safe, clean water and possible stigmatization experienced by mothers that opt to formula feed. A small difference between the two clinic groups was also observed when it came to whether mothers were shown how to make a bottle.

Seeing that the provision of counselling on safe infant feeding practices is an important component of the PMTCT programme (PMTCT Programme KZN 2002), it can be viewed as positive that antenatal– and postnatal nutrition education seemed to have occurred more often in PMTCT clinics as opposed to non–PMTCT clinics. This could explain why a higher incidence of exclusive breastfeeding and slightly later introduction of supplementary foods and liquids were observed amongst mothers attending PMTCT clinics.

As observed, infant feeding practices were still not ideal in both clinic groups. However, the high level of antenatal clinic attendance documented for both groups serves as evidence that if utilized optimally, the antenatal clinic could serve as an ideal medium through which infant feeding education can take place. This is especially significant when considering the fact that clinic–based nursing staff were cited as the most important source of infant feeding information by both groups of mothers in the antenatal and postnatal phases.

The documented infant feeding practices should be interpreted against the backdrop of factors that could influence infant feeding decisions. These factors include the socio–demographic characteristics of the mothers surveyed such as level of education, household income, whether the mother works,

whether she has a say in household income expenditure, whether she lives with the infant's father and has access to clean, safe water. More educated mothers tend to have a higher inter–household status and are more likely to have a say in income expenditure as well as having a better ability to make use of health care facilities such as Well Baby Clinics. Where mothers do not work, it can be assumed that they are more likely to have sufficient time for infant care. Although the majority of mothers did not live with the infant's father, this need not be viewed as a constraint to appropriate infant nutrition as a child's nutritional status is often better in female–headed households. Access to clean safe water is essential to facilitate safe formula feeding practices. However, despite the fact that the majority of mothers surveyed had access to tap water, it was not always available in the house. This could have made formula feeding an inconvenient choice.

Although a third of mothers indicated that they had no infant care support, the majority indicated the availability of resources such as social support from peers and significant others like the infant's grandmother. However, it is important to note that where an infant is not cared for by its biological mother, the incidence of malnutrition could be higher. Furthermore, the presence of social support could also impair the promotion of exclusive breastfeeding in that the infant's grandmother was cited as the second most important influence to give the infant something other than breastmilk. Results generated by this study indicate that infant feeding beliefs and practices that could be constraints to the promotion of exclusive breastfeeding, include the assumptions that infant crying is most often a hunger cue, that breast milk alone cannot satisfy an infant's hunger because it is too little or too weak and that an infant's stomach requires cleansing.

The importance of taking cognisance of beliefs such as those reported in the previous paragraph, lies in that when an infant's crying is assumed to be hunger and breast milk is perceived to be inadequate to fulfil this need,

infants are often given solids or supplementary formula feeds in an attempt to stop their crying/hunger. This practice would jeopardize exclusive breastfeeding. However, Allen and Gillespie (2001: 17) are of the opinion that mothers with an initial lower milk volume/milk production are more likely to introduce food into the infant's diet. This observation indicates that education regarding issues of lactation management should never be overlooked when conducting infant feeding education.

Even though the majority of mothers from both clinic groups cited clinic–based nursing staff as their most important source of infant feeding information in the antenatal and postnatal phases, it should not be overlooked that conducting the interviews in the clinic environment could have influenced these results. Hence the influence exerted by significant others such as the infant's grandmother and great–grandmother should not be overlooked as role players in shaping infant feeding decisions.

Multivariate logistic regression was conducted in order to determine predictors of exclusive breastfeeding in the non-PMTCT and PMTCT clinics respectively. Highly significant predictors in both clinic groups were that the infant was not given any liquids and solids in addition to breast milk. These outcomes were to be expected as it underlines the definition of exclusive breastfeeding. In PMTCT clinics, additional significant predictors of exclusive breastfeeding included that the mother had not visited the clinic since the infant's birth, that she breastfed on demand and that she was experiencing stress at the time of the study. The reason for this example of reverse causality could be indicative of exclusively breastfed infants being healthier and therefore require fewer clinic visits. It is also possible that mothers of exclusively breastfed infants received appropriate education in the antenatal period and had the knowledge and skills to implement and sustain exclusive breastfeeding.

The limited number of significant predictors of exclusive breastfeeding in both non-PMTCT and PMTCT clinics can be explained by the fact that infant feeding behaviour is multifactorial by nature and the interaction between factors that influence infant feeding decisions is strong.

CHAPTER SIX

RECOMMENDATIONS

Based on the critical analysis of the literature and the results of this research, the following recommendations are made to serve as guidelines to adminstrators and executors of public health policy in South Africa:

6.1 Recommendations to health authorities

- Health workers conducting infant feeding education need to be aware of the infant feeding practices applicable to their target group as well as of unfounded infant feeding beliefs held by that target group. Infant feeding practices such as the early introduction of foods and or liquids in addition to breast milk (4.2.1) should be considered as well as cultural beliefs related to practices such as "stomach cleansing" (4.3.1). In gaining insight into such - often unfounded - beliefs, health workers are more likely to start their education efforts "where the mother is at" and in so doing, are more likely to build a trusting relationship where the odds for successful outcomes are greater.

- Emphasis needs to be placed on the dangers of mixed feeding as nearly half of mothers attending both clinic groups mixed fed their infants (4.2.1). As a result mothers need to be counseled and supported so that they can make the appropriate choice for themselves either to exclusively breastfeed or to use infant formula

- Mothers that opt to formula feed should be provided with the necessary practical advice in order to implement formula feeding effectively and

safely as the minority of mothers surveyed received information about formula feeding (4.2.1).

- A decline in exclusive breastfeeding practices with increasing infant age observed in both clinic groups (4.2.1) should be considered by health authorities when planning intervention strategies that aim to increase the duration of exclusive breastfeeding. By addressing cultural beliefs and perceptions such as the belief in lactation insufficiency, weak breast milk or a crying infant that is assumed to be hungry (4.3.1) the duration of exclusive breastfeeding could be extended. The duration of exclusive breastfeeding can also be extended by being taking extra care when it comes to the marketing of breast milk substitutes.

- Many women make their infant feeding decisions very early in their pregnancy (Gross et al. 1998 and Reeves Tuttle & Dewey 1995). As a result, antenatal infant feeding education needs to commence as early as possible during pregnancy.

- The mother's first postnatal visit needs to occur before the infant is six weeks old as the mean age for introducing foods and/or liquids in addition to breastmilk was 5,83 weeks for non-PMTCT clinics and 6,91 weeks for PMTCT clinics (4.2.1). Should the first postnatal visit occur before this critical infant age, there would be a greater opportunity of curbing inappropriate infant feeding practices and supporting appropriate infant feeding practices.

- The PMTCT programme is a good example of an intervention where counselling on infant feeding forms an important part of the interaction between a health worker and a mother. Due to the fact that health promotion strategies implemented at PMTCT clinics are closer to the ideal

practice of health promotion, this programme should be used as a vehicle to improve infant feeding support to all mothers, not only those with an HIV-positive status.

- Mothers should be motivated to breastfeed exclusively on a continuous basis, both at discharge after labour and at the first postnatal clinic visit. They should be given the necessary support where beliefs are held that breastfeeding alone is not sufficient to meet an infant's needs and curb its hunger (4.2.1 & 4.3.1).

- To ensure that message delivery at clinic level is in accordance with national policy, every baby clinic should have a written infant feeding policy which is clearly communicated to all staff.

- The accuracy and efficacy of message delivery by clinic staff could be enhanced by the appropriate training of nursing staff and attendance of refresher courses on issues such as counselling skills.

Very few research projects are faultless in design, implemetation and interpretation. In order to make a contribution to the future planning and implementation of studies of a similar nature, the researcher wishes to make the following recommendations to fellow researchers:

6.2 Recommendations for further research

- Appropriate strategies based on the Programme Planning Model (figure 1) should be investigated to combat inappropriate infant feeding practices of mothers and caregivers, irrespective of HIV status.

- Constraints to formula feeding such as the level of stigmatization experienced due to formula feeding in communities where breastfeeding is the social norm should be determined. This would give an indication of the feasibility, efficacy and cost effectiveness of providing free breast milk substitutes to mothers who opt to use them. It could also serve as an indicator of whether community awareness strategies are necessary in order to facilitate the execution of this arm of the PMTCT programme.

- Documentation of the cultural practice of "stomach cleansing" justifies further investigation. Not only does the practice undermine the promotion of exclusive breastfeeding, but it could prove to have dire effects on infant health, especially where purging is induced through administration of "harmful ingredients" (section 4.3.1) such as milk of magnesia.

- In instances where studies are not limited by time and cost constraints, studies investigating infant feeding practices should be conducted with a longitudinal as opposed to a cross–sectional design (section 3.2.1) as a cross-sectional design tends to overestimate the rate of exclusive breastfeeding and the proportion of the population that has ceased breastfeeding (Aarts et al. 2000). Study designs centred around nutritional anthropology could also make a valuable contribution to documenting infant feeding practices.

- Studies investigating the infant feeding practices of mothers and the factors influencing their infant feeding decisions should ideally be conducted in a non–clinic environment by for example gathering data by means of home visits. This would limit the level of bias that the research environment could have on the data being generated.

- In order to do a more in-depth assessment of the emotional health of mothers, appropriate, culturally specific measuring instruments should be used.

- In order to reduce fieldworker and respondent fatigue and increase the study coverage within a specific time frame when conducting a study of this nature, it is recommended that a shorter survey questionnaire be used.

- Studies determining infant feeing practices and the factors shaping these decisions should include focus group discussions with mothers, grandmothers, fathers and health care providers. Strategies such as these would enable the researcher to obtain a more accurate perspective on the factors that shape infant feeding decisions and could be used to validate the data generated by the mothers themselves.

- A critical analysis of the literature revealed that infant feeding practices and the factors affecting them are culturally specific. In the light of the pandemic proportions that HIV/AIDS has reached in South Africa, it would be of great public health importance to gain insight into the infant feeding practices and factors influencing these decisions across the spectrum of the various cultural and ethnic groups that make up the rainbow nation in South Africa.

- When designing interventions to promote exclusive breastfeeding among a similar target group significant predictors identified in this study should be considered as well as the significant variables that were fed into the multivariate logistic regression model.

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Annexure I: English version of survey questionnaire

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SURVEY QUESTIONNAIRE:
THE CURRENT INFANT FEEDING PRACTICES AND RELATED FACTORS OF ZULU MOTHERS WITH 0 – 6 MONTH OLD INFANTS ATTENDING BABY CLINICS IN CENTRAL DURBAN, KWA - ZULU NATAL: AN EXPLORATORY STUDY

FOR ADMINISTRATIVE USE:	
Name of field worker.....	
Date.....	
Respondent/infant code	
Clinic from which respondent was recruited:	
Lancers Road	1
Lamontville	2
Glen Earle/Newlands East	3
Kwamashu	4
Umlazi D	5
Umlazi K	6
Clinic type:	
PMTCT	1
Non – PMTCT	2
Current feeding method:	
Exclusive Breast feeding (EBF)	1
Mixed feeding	2
Formula feeding/bottle feeding	3
Predominant breast feeding	4

Good morning/afternoon

- **ARE YOU THE MOTHER OF THIS BABY?**
- **WERE YOU BORN BEFORE 1984?**
- **IS ZULU YOUR MOTHER TONGUE?**
- **IS THIS BABY NOT ONE OF A TWIN?**
- **HAVE YOU NOT RECEIVED ANY FORMAL TRAINING IN NUTRITION (for example nutrition diploma/degree, nurse, doctor, nutrition advisor, community health worker course)?**

NOTE TO FIELD WORKER: IF THE RESPONSE TO ALL THE ABOVE QUESTIONS ARE YES, PROCEED WITH THE INTERVIEW. SHOULD THE RESPONSE BE NO, THANK THE RESPONDENT AND SELECT THE NEXT PROSPECTIVE PARTICIPANT.

I am gathering information for the University of Natal about the feeding of babies in your area. This questionnaire takes about 45 minutes to complete. During this interview I will ask you questions about the feeding of this baby. There are no right or wrong answers. All your answers are anonymous and will be kept confidential. It is your right to refuse answering questions that you are uncomfortable with.

Would you be prepared to answer my questions?

NO – Thank you very much for your time
(Proceed to next prospective respondent)

YES – Thank you very much. Would it be convenient for you to answer my questions now?

PROCEED WITH THE INTERVIEW

FOR ANSWERING THESE QUESTIONS WE ARE GIVING EACH PARTICIPANT A FOOD HAMPER AT THE END OF THE INTERVIEW.

SECTION A: TARGET GROUP SOCIO DEMOGRAPHIC PROFILE

1. Infant's date of birth:
   Year.....Month.....Day.....
(Note to field worker: correlate the above with the infant's "Road to Health Card")

2. Infant's gender

Male	1
Female	2

3. **In terms of the age strata of this study sample, in which age category would this infant fall in: (**For ADMINISTRATIVE USE ONLY)

0 – less than 6 weeks	1
6 weeks – less than 14 weeks	2
14 weeks to six months	3

4. Infant's birth weight .....kg
(Note to field worker: check against infant's "Road to Health Card")

5. Did this infant weigh less than 2,5 kg at birth? (**FOR ADMINISTRATIVE USE ONLY)**

Yes	1
No	2

6. What is your age? .....years

7. What is your completed level of education:

No school education	1
Grade 1 – 7 (primary school)	2
Grade 8 – 12 (secondary school)	3
Tertiary education	4

8. How many years did you spend in school?
..... years

9. Are you currently going out to work? If **NO**, proceed to **Q12.**

Yes	1
No	2

10. If **YES**, for how many days of the week do you work?

1 day	1
2 days	2
3 days	3
4 days	4
5 days	5
6 days	6

7 days	7

11. If **YES**, for how many hours are you usually away from home at a time?

---

12. What sources of income does this infant's family depend upon? (**Note to field worker: may indicate more than one response)**

Full time employment	1
Part time / casual employment	2
Self employed	3
Pension or disability grant	4
Child maintenance	5
Subsistence	6
No income	7

13. Do you have any say in how the above income is being spent?

Yes	1
No	2

14. What is the total income of the household where the infant lives? (**bdi)**

0 – R500 per month	1
R500 – R1000 per month	2
R1000 – R2000 per month	3
R2000 – R3000 per month	4
R3000 – R4000 per month	5
R4000 and higher	6

15. Do you live with the father of this child? (**bdi**)

Yes	1
No	2

16. How many people (besides the study infant) sleep in the household where the infant lives for at least 4 nights a week?

One to Two	1
Three	2
Four	3
Five	4
Six	5
Seven	6
Eight or more	7

17. How many rooms are there in the house that the infant lives?

One	1
Two	2
Three	3
Four or more	4

18. How many bedrooms are there in the house that the infant lives?

One	1
Two	2
Three	3
Four or more	4

19. Where do you get your drinking water?

Bore hole	1
River/stream/dam	2
Rain water in tank	3
Tap in house	4
Public tap (outside house)	5
Bought water	6

20. If you obtain drinking water from a source outside the home, do you do anything to it before drinking it ?

Yes	1
No	2

21. If YES, what do you do to it? **(Note to field worker: asked as open – ended question)**

Jik	1
Chlorine	2
Boil	3
Other	4

22. Are there health service facilities (e.g. clinics) within walking distance from the infant's home?

Yes	1
No	2

23. Did you make use of health care facilities (e.g. clinics) while you were pregnant with this baby?

Yes	1
No	2

24. If the answer to **Q23** is **YES,** how often?

.....

25. Did anybody talk to you about what to feed your baby while you were pregnant?

Yes	1
No	2
Can't remember	3

26. If the answer to **Q25** is **YES**, complete the following table. **(Note to field worker: respondent may choose more than one option)**

YES	WHO: 26A	WHAT:26B
	Doctor	
	Nursing sister	
	Nurse	
	Nutrition advisor/health care worker	
	Counselor	
	Family member – please specify	
	Another mother	

27. Have you visited a clinic since the baby was born?

Yes	1
No	2

28. What do you most often use the clinic for (**Note to field worker: respondent may choose more than one option)**

Infant illness ....specify	**28 A** **28 B**	1
Own illness ....specify	**28 A** **28 B**	2
Family planning	**28 A**	3
Immunization	**28 A**	4
Baby check up	**28 A**	5

29. Have you ever received information about how to feed **THIS** baby after the baby was born? If **NO**, proceed to **Q34.**

Yes	1
No	2

30. If the answer to **Q29** is **YES**, complete the following table: **(Note to field worker: respondent may choose more than one option)**

YES	WHO: 30 A	WHAT: 30 B
	Doctor	
	Professional nurse	
	Staff nurse	
	Nutrition advisor	
	Counselor	
	Family member – please specify	
	Another mother/friend/ neighbour	

31. Do you follow all or part of the advice about feeding **THIS** baby given to you at the clinic/hospital? **(Note to field worker: If the answer to Q29 was NO, do not answer this question)**

Yes	1
No	2

32. If the answer to **Q31** is **YES**, what part of the information did you follow and why?

INFORMATION: 32 A	REASON: 32 B

33. If the answer to **Q31** is **NO,** what part of the information did you not follow and why?

INFORMATION: 33 A	REASON: 33 B

34. Is this your only child?

Yes	1
No	2

35. If the answer to **Q34** was **NO**, how many other children (excluding the study infant) younger than five years do you have? Were they breast fed? (**Note to field worker: If the study infant is the respondent's first born, proceed to question 37)**

Other children 35 A	Breast fed: YES/NO 35 B	If YES, for how long? (months) 35 C	Reason for breast feeding 35 D	Reason why breast feeding was stopped 35 E
First born	**YES 1** **NO 2**			
Second born	**YES 1** **NO 2**			
Third born	**YES** 1 **NO 2**			

36. For your older children (other than the study infant) that were only bottle fed, can you tell me why you bottle fed them?

---

37. For the study infant: If this baby has ever been breast fed, please answer the following questions:

If YES, for how long? (weeks) 37 A	Reason/s for breast feeding 37 B	Reason why breast feeding was stopped (if applicable) 37 C

SECTION B: INFANT FEEDING PRACTICES

38. Is your baby currently sick?

Yes	1
No	2

39. If the answer to **Q38** is **YES,** please indicate the nature of the illness: **(note to fieldworker: asked as an open – ended question)(bdi):**

Diarrhoea	1
Skin infection	2
Chest infection	3
Nose infection	4
Other – please specify	5

40. If the answer to **Q38** is **YES,** has it affected the way you feed your baby?

Yes	1
No	2

41. For the past week, what has your baby been fed?
(Note to field worker: this question will be asked as an open – ended question. The grid that follows is for your use only and should not be stated as examples to the mother – more than one option may be indicated)
*****USE THE PICTURES SUPPLIED TO YOU TO GUIDE THE MOTHER*****

Breast milk only	1
+ water	2
+ sugar water	3
+ tea	4
+ fruit juice	5
+ porridge	6
+ Nestum	7
+ Cerelac	8
+ fruit/vegetables	9
+ Purity baby food	10
+ infant formula: please specify the type	11
+ cows milk	12
+ Nespray	13
+ coffee creamers (Cremora)	14
Infant formula only – please specify the type	15
+ water	16
+ sugar water	17
+ tea	18
+ fruit juice	19
+ porridge	20
+ Nestum	21
+ Cerelac	22
+ fruit/vegetables	23
+ Purity baby food	24
+ cows milk	25
+ coffee creamers (Cremora)	26

42. If your answer to **Q41** is breast milk only, have you ever added any other liquids or foods to the baby's diet? **(Note to field worker, presence of exclusive breastfeeding is being determined here)**

Yes	1
No	2

43. At what age did you introduce other liquids or foods to the baby's diet?

_____

44. What did you give?

---

45. If you have ever breast fed, has anyone ever shown you how to breast feed?

Yes	1
No	2

46. If the answer to **Q45** is **YES**, who?

---

47. If you have ever breast fed, does it/did it hurt when you breast feed?

Yes	1
No	2

48. If you have ever breast fed, do you/did you feel the baby is satisfied after a breast feed?

Yes	1
No	2
Don't know	3

49. If you have ever breast fed your baby, do you feed your baby "on demand" i. e. when the baby wants to feed **(YES)** or did you feed according to a schedule?

Yes	1
No	2

50. If the baby was ever breast fed, when was the baby first introduced to breastmilk:

Immediately after birth	1
Few hours after birth	2
The day after birth	3
Two days after birth	4
More than two days after birth	5
Don't know	6

51. If the baby was not given breast milk soon after birth, what was the baby given and what was the reason?

Specify pre – lacteal feed **51 A**	Reason **51 B**

52. If the baby was ever breast fed, who influenced you to give your baby anything other than breast milk and what was the reason for this recommendation? (**Note to field worker: asked as an open – ended question. May indicate more than one response. Mother may need probing when it comes to giving reasons).**

WHO 52 B → **WHAT 52 A ↓**	Own decision 1	Mother's advice 2	Mother in – law's advice 3	Grand - Mother's advice 4	Advice from baby's father 5	Advice from sister/ other relative 6	Advice from friends/ Neighbour 7	Advice from clinic staff 8
Hungry baby 1								
Baby cried a lot 2								
Too little milk 3								
Weak milk 4								
Mother ill 5								
Baby ill 6								
Baby refused breast 7								
Mother went to work 8								
Breast problems e.g. sore nipples 9								
Pregnant again 10								
Other – please specify								

53. If the baby receives liquids other than breast milk, how are liquids given to this baby?

Bottle	1
Cup	2
Spoon	3
Other – please specify	4

54. Has anyone ever talked to you about how to use a bottle (formula) to feed your child?

Yes	1
No	2

55. If the answer to **Q54** is **YES**, who spoke to you? (**note to field worker: asked as open ended question)**

Clinic staff member	1
Mother/mother – in law	2
Friend	3
Other – specify	4

56. Are you currently receiving free formula from the clinic?

Yes	1
No	2

57. Has anyone at the clinic ever shown you how to make a bottle for your baby?

Yes	1
No	2

58. Has the baby ever been given anything to clean his/her stomach?

Yes	1
No	2

59. If the answer to **Q58** is **YES**, what was the baby given?

Herbs	1
Medicine (umuthi wenyoni)	2
Enema	3
Other – please specify	4

60. Does your baby suck a dummy? **(note to field worker: no need to ask if baby is sucking dummy at time of interview)**

Yes	1
No	2

SECTION C: MOTHER'S KNOWLEDGE, ATTITUDES, PERCEPTIONS AND BELIEFS REGARDING INFANT FEEDING

61. What is the first reason that crosses your mind when your baby cries ? **(note to field worker: only ONE response may be given here)**

Baby is wet	1
Baby want's to be picked up	2
Baby is sick	3
Baby is hungry	4
Baby is cold	5
Other – please specify	6

62. Do you think there are specific foods that infants should receive at certain ages?

Yes	1
No	2
Don't know	3

63. If the answer to **Q62** is **YES**, please state the age, particular food and/or drink that should be introduced and the reason.

Infant's age (months) **63 A**	Food/drink to be given **63 B**	Reason **63 C**

64. Traditionally in your family, are there certain foods or liquids that a baby should **NOT** be given?

Yes	1
No	2

65. If the answer to **Q64** is YES, please state the age, particular food and/or drink that should **NOT** be given.

Infant's age **65 A**	Food/drink not to be given **65 B**	Reason **65 C**

66. What do you think are the characteristics that a mother of an infant (younger than six months) needs to feed her baby properly?

.....
.....
.....
.....

67. If your baby gets diarrhoea, what do you think is the main reason?

---

68. Do you think the way you feed a baby affects the baby's health? If **YES,** how?

---

69. Where would you like to receive information on feeding your baby?:

At my local clinic	1
In my home	2
At the local church hall	3
At the local school hall	4
Other – please specify	5

70. How would you like to receive information on feeding your baby? **(note to field worker: more than one response may be given):**

Personal conversation with clinic staff	1
Personal conversation with friend	2
Personal conversation with a relative	3
Group meeting with other mothers of infants	4
Radio programme	5
Television programme	6
Newspaper	7
Magazine e.g. Bona, Drum	8
Brochure to take home	9
Poster	10
Video	11
Other – please specify	12

71. If you were never shown how to breast feed **(Q45),** would you have liked someone to have shown you how to breast feed or help you with breast feeding?

Yes	1
No	2

SECTION D: POTENTIAL BARRIERS TO INFANT FEEDING PRACTICES

72. Are you currently feeding your baby the way you would like to? (**Note to field worker: If the response to this question is YES, proceed to Q77)**

Yes	1
No	2

73. If **NO**, how would you like to feed your baby?

.....

.....

.....

74. If your answer to **Q72** is **NO**, were you influenced by advice from somebody else on how to feed your baby?

Yes	1
No	2

75. If your answer to **Q72** is **NO**, who influenced you to feed your baby the way you are currently doing? **(note to field worker: ask as an open – ended question)**

Advice from your mother	1
Advice from your mother – in – law	2
Advice from your grandmother	3
Advice from the baby's father	4
Advice from your sister/other relative	5
Advice from friends/neighbours	6
Advice from clinic staff	7
Own decision	8

76. If your answer to **Q72** is **NO**, what influenced you to feed your baby the way you are currently doing?

Lack of time	1
Lack of money	2
Lack of support	3
Poor health of mother	4
Poor health of baby	5
Breast problems	6
Working mother	7
Other	8

77. Who helps you with taking care of this baby? (**bdi)**

Nobody	1
Mother/mother – in law	2
Grandmother	3
Older child	4
Friend/ neighbour	5
Baby's father	6
Sister/ other relatives	7
Other	8

78. Do you think you are healthy?

Yes	1
No	2
Not sure	3

79. if your answer to **Q78** is **NO**, for how long have you not been healthy?

Few days	1
Week	2
Few weeks	3
Month	4
Few months	5
Few years	6
Don't know	7

80. Was this pregnancy planned? (**bdi)**

Yes	1
No	2

81. Do you feel good about yourself as a person? (**bdi)**

Yes	1
No	2

82. Do you feel wortwhile? (**bdi**)

Yes	1
No	2

83. Do you feel you receive adequate emotional support from the baby's father, family or friends? (**bdi)**

Yes	1
No	2

84. Are you satisfied with your living arrangement? (**bdi)**

Yes	1
No	2

85. Are you currently experiencing any stressful events in your life such as financial problems, unemployment, serious illness or death in the family? (**bdi)**

Yes	1
No	2

86. Were you offered an HIV test during your pregnancy?

Yes	1
No	2
Don't know	3

87. Did you opt to take the test?

Yes	1
No	2

THANK YOU FOR TAKING THE TIME TO ANSWER THESE QUESTIONS

Annexure II: Zulu version of survey questionnaire

UMKHAKHA WEZESAYENSI NEZOLIMO
UMNYANGO WESAYENSI YOKUDLA NENGCEBO
YOMPHAKATHI
PRIVATE BAG X01
SCOTTSVILLE
PIETERMARITZBURG
3209

IMIBUZO: Ukuhlola uvo lomphakathi: IZINDLELA ZESIMANJE ZOKONDLA USANA KANYENOKUNYE OKUPHATHELENE NOMAMA ABANGAMAZULU ABANABANTWANA ABANEZINYANGA EZI 0-6 UBUDALA ABAHAMBA IMITHOLAMPILO YEZINGANE ENKABENI YETHEKU, KWAZULU NATALI: UCWANINGO OLUCHAZAYO.

OKWABAPHETHE:

Igama locwaningayo.....
Usuku.....
Ikhodi yophendulayo.....
Ikhodi yosana.....
Usuku lokuzalwa kosana.....
Umtholampilo ohanjwa ophendulayo.....

Sawubona

- **UNGUMAMA WALENGANE?**
- **WAZALWA NGAPHAMBI KONYAKA KA-1984?**
- **NGABE ISIZULU ULIMI LWAKHO LWEBELE?**
- **NGABE LOMNTWANA AKASILONA IWELE?**
- **AWUKAZE UTHOLE UKUQEQESHWA OKUPHELELE NGOKONDLIWA KOMZIMBA (isibonelo iziqu zediploma/idigri yokondla umzimba, ubuhlengikazi, ubudokotela, ukuba umeluleki kwezokudla okunomsoco, isifundo sokuba unompilo womphakathi)?**

QAPHELA MCWANINGI:UMA IZIMPENDULO ZAYO YONKE LEMIBUZO ENGENHLA KUNGU YEBO, QHUBEKA NEMIBUZO. UMA IMPENDULO KUBA NGU QHA, BONGA KULOWO OBEBUZWA EBESE UKHETHA OLANDELAYO ONGABAMBA IQHAZA.

Ngiqoqela inyuvesi yaseNatali ulwazi ngokondliwa kwabantwana endaweni yangakini. Leli phepha lemibuzo lithatha isikhathi esingangehora elilodwa ukuliphendula lonke. Kulenkulumo-mpendulwano ngizokubuza imibuzo mayelana nokondliwa kwalo mntwana. Azikho izimpendulo ezilungile nezingalungile. Kuzozonke izimpendulo zakho igama lakho lizogodlwa futhi izimpendulo zizogcinwa ziyimfihlo. Uvumelekile ukuba ungawuphenduli umubuzo ongakupathi kahle.

Ungathanda ukuthi uphendula imibuzo yami?

CHA– Ngibonga kakhulu isikhathi ongiphe sona (Dlulela kolandelayo ongaphendula)

YEBO– Ngibonga kakhulu. Ngabe kulungile ukuthi uphendule imibuzo yami manje?

QHUBEKA NEMIBUZO EKUPHELENI KWENGXOXO SIPHA OBEPHENDULA ISIPHO ESINOKUDLA.

ISIQEPHU A: IMININGWANE NGEQEMBU OKUCWANINGWA NGALO

11. Usuku lokuzalwa komtwana:
    Unyaka.....Inyanga.....Usuku.....
    (QAPHELA MCWANINGI: Hlanganisa lokhu okungasenhla ngokuqhathanisa ne "Road to Health Card") yomtwana.

12. Ubulili bontwana

Isilisa	1
Isifazane	2

13. Ngokohlelo lweminyaka wesampula yalolucwaningo, lungena ngaphansi kwaluphi uhla lweminyaka lolu mtwana: (Okokusetshwenziswa ngabaphathi)

0 – 6 wamasonto	1
6 – 14 wamasonto	2
Ngaphezu kwamasonto awu -14 kuya ezinyangeni eziyisithupha.	3

14. Isisindo azalwe naso umtwana.....kg

15. Ngabe lomtwana wazalwa enesisindo esingaphansi kuka 2,5kg? **(OKWABAPHATHI)**

Yebo	1
Cha	2

16. Uneminyaka emingaki?.....

17. Uqede liphi ibanga lemfundo:

Akukho mfundo yasesikoleni	1
Ibanga 1 – 7 (primary school)	2
Ibanga 8 – 12 (secondary school)	3
Imfundo yezinga eliphakeme	4

18. Wahlala iminyaka emingaki esikoleni? .....

19. Uyasebenza njengamanje? Uma kucha dhile kumibuzolo 12.

Yebo	1
Cha	2

20. Uma usebenza, usebenza izinsuku ezingaki esontweni?

Usuku olu-1	1
Usuku olu-2	2
Usuku olu-3	3
Usuku olu-4	4

Usuku olu-5	5
Usuku olu-6	6
Usuku olu-7	7

21. Uma impendulo kungu yebo, uvame ukungabikhona ekhaya amahora amangaki?

---

12. Umndeni womnwana uyithola kanjani imali yokuziphilisa? (**QAPHELA MCWANINGI: izimpendulo zingaba ngaphezu kweyodwa)**

Usebenza ngokugcwele	1
Ubamba itoho	2
Uyazisebenza	3
Uhola impesheni noma imali yokukhubazeka	4
Isondlo sengane	5
Imali yokudla	6

13. Unalo yini izwi ekusetshenzisweni kwalemali engenhla?

Yebo	1
Cha	2

14. Singakanani isamba semali salapho kuhlala khona umtwana? (**bdi)**

0 – R500 ngenyanga	1
R500 – R1000 ngenyanga	2
R1000 – R2000 ngenyanga	3
R2000 – R3000 ngenyanga	4
R3000 – R4000 ngenyanga	5
R4000 noma ngaphezulu	6

15. Uhlala naye uyise walo mntwana?

Yebo	1
Cha	2

16. Bangaki abantu (ngaphandle kwalo mntwana) abalala endlini eyodwa nomntwana, okungenani kane ngesonto?

Babili	1
Bathathu	2
Bane	3
Bahlanu	4
Bayisithupha	5
Bayisikhombisa	6
Bayisishiyagalombili noma ngaphezulu	7

17. Inamakamelo amangaki indlu lapho kuhlala khona umntwana?

Linye	1
Mabili	2
Mathathu	3
Mane noma ngaphezulu	4

18. Mangaki amakamelo okulala kulendlu lapho kuhlala khona umntwana?

Linye	1
Mabili	2
Mathathu	3
Mane noma ngaphezulu	4

19. Uwatholaphi amanzi okuphuza?

Esiphethwini	1
Emfuleni/umgobhozo/idamu	2
Amanzi emvula ethangini	3
Umpompi wasendlini	4
Umpompi womphakathi (ngaphandle kwendlu)	5
Okunye	6

20. Uma uthola amanzi okuphuza ngaphandle kwekhaya, kukhona yini oqale ukwenze kuwona ngaphambi kokuba uwaphuze?

Yebo	1
Cha	2

21. Uma kukhona, uye uwenzeni? **(QAPHELA MCWANINGI: beka kube umbuzo ovulelekile)**

Ijikhi	1
Iklorine	2
Uyawabilisa	3

22. Ngabe zikhona yini izinqalasizinda zezempilo (isibonelo umtholampilo) ebangeni elihambeka ngonyawo usuka lapho kuhlala khona untwana?

Yebo	1
Cha	2

23. Ngesikhathi usakhulelwe wawuzisebenzisa yini izinqalasizinda zezempilo (isibonelo umtholamilo)?

Yebo	1
Cha	2

24. Uma impendulo yombuzo 23 ithi Yebo, uyekangaki emtholampilo ? .....

25. Ukhona yini owake waxoxisana nawe ngokuthi kufanele umnike kudla kuni umtwana wakho ngesikhathi usakhulelwe?

Yebo	1
Cha	2

26. Uma impendulo yombuzo 25 ithi Yebo, gcwalisa Ithebuia elingenzanzi (Qophela mncwaningi obaphenduli Bemibuzo bangathetha umbuzo owodwo nangaphezulu).

YEBO	UBANI	INI
	Udokotela	
	Umhlengikazi – sista Umhlengikazi	
	Umeluleki wezokudla okunomsoco/ umsebenzi wonakekelo Iwezempilo	
	Umeluleki	
	Ilunga lomndeni – yisho ukuthi ngubani	
	Omunye umama	

27. Usuwake wawuvakashela umtholampilo selokhu umtwana wakho azalwa?

Yebo	1
Cha	2

28. Isikhathi esiningi uwusebenziselani umtholampilo **(QAPHELA MCWANINGI: ophendulayo angakhetha nokungaphezu kokukodwa)**

Ukugula komntwana ....cacisa	1
Ukugula kwami ....cacisay	2
Ukuhlela umndeni	3
Ukugoma	4
Okunye	5

29. Sewake waluthola ulwazi ngokondliwa kwalo mntwana kumbantu abasebenza emtholampilo wangakini emva kokuzalwa komntwana lwakho? Uma ungakaze dllela kumbuzo olandela ye 33.

Yebo	1
Cha	2

30. Uma impendulo yombuzo 29 ithi YEBO, qedela leli thebula elilandelayo: **(QAPHELA MCWANINGI: ophendulayo angakhetha okungaphezu kokukodwa)**

YEBO	UBANI	INI
	Udokotela	

	Umhlengikazi-sista	
	Umhlengikazi	
	Umeluleki wezokudla okunomsoco/ umsebenzi wonakekelo lwezempilo	
	Umeluleki	
	Ilunga lomndeni – yisho ukuthi ngubani	
	Omunye umama	

31. Ngabe uyasithatha yini iseluleko ngokondliwa komtwana osinikezwa abasebenzi base mtholampilo noma esibhedlela?

Yebo	1
Cha	2

32. Uma impendulo yombuzo 30 kube ngu YEBO, iyiphi ingxenye yolwazi owayilandela futhi kungani?

ULWAZI	ISIZATHU

33. Uma impendulo yombuzo 30 kube ngu CHA, iyiphi ingxenye yolwazi ongayilandelanga futhi kungani?

ULWAZI	ISIZATHU

34. Unalommntwana kuphela?

Yebo	1
Cha	2

35. Zingaki ezinye izingane onazo ezineminyaka engaphansi kwesihlanu (ngaphandle kwalo mntwana esikhuluma ngaye) **(QAPHELA MCWANINGI: uma umntwana lo okukhulunywa ngaye engowokuqala kulowo ophendulayo, dlulela kumbuzo – 37)**

Ezinye izingane	Uncela ibele likanina: YEBO/CHA	Uma uthi yebo, usencele isikhathi esingakanani?	Isizathu sokumncelisa	Isizathu sokuthi kungani ayekiswa ukuncela
Owokuqala				
Owesibili				
Owesithathu				

36. Izingane zakho ezindadlana (ngaphandle kwalo mntwana) owazincelisa ibhodlela ungangitshela ukuthi kungani wawuzondla ngebhodlela?

---

37. Kumntwana esixoxa ngaye: uma wake wamncelisa ngebele, ngicela uphendule lemi buzo elandelayo:

Uma uthi YEBO, kwaba yisikhathi esingakanani?	Izizathu zokuncelisa ibele	Isizathu sokuthi kungani wamyekisa ukuncela ibele (uma kunjalo)

ISIQEPHU B: IZINDLELA ZOKONDLA

38. Ngabe umtwana wakho uyagula sikhuluma nje?

Yebo	1
Cha	2

39. Uma impendulo embuzweni 38 kungu YEBO, shono ukuthi sifo sini: **(QAPHELA MCWANINGI: buza njengombuzo ovulelekile) (bdi):**

Uhudo	1
Isifo sesikhumba	2
Isifo sofuba	3
Isifo samakhala	4
Okunye-cacisa	5

40. Uma impendulo yombuzo 38 kungu YEBO, ngabe ithintekile yini indlela owondla ngayo umtwana?

Yebo	1
Cha	2

41. Ngeviki eledlule, umtwana wakho ubumuphani?
(QAPHELA MCWANINGI: lo mbuzo uzobuzwa njengombuzo ovulelekile. Uhla olulandelayo luzosetshenziswa nguwena futhi akumele kushiwo njengesibonelo kumama-angakhetha okungaphezu kokukodwa)

Ubisi lwebele kuphela	1
+ amanzi	2
+ umbhubhudlo	3
+ itiye	4
+ ijusi	5
+ iphalishi	6
+ inestamu	7
+ isirilekhi	8
+ izithelo/izitshalo	9
+ ukudla kwengane ipurity	10
+ ifomula yabantwana	11
+ ubisi lwezinkomo	12
+ inesipuleyi	13
+ ubisi lwekhofi (Cremora)	14
Ifomula yomntwana kuphela	15
+amanzi	16
+umbhubhudlo	17
+ itiye	18
+ ijusi	19
+ iphalishi	20
+inestamu	21
+isirilekhi	22
+ izithelo/izitshalo	23
+ukudla kwezingane I-purity	24
+ubisi lwezinkomo	25
+ inesipleyi + ubisi lwekhofi	26

42. Uma impendulo embuzweni 41 kuwubisi lwebele kuphela, lukhona uukudla okwamanzi noma ukudla owake wakwengeza kokupha umtanakho?

Yebo	1
Cha	2

43. Yayineminyaka emingaki ingane yakho ngesikhathi uyifundisa okunye ukudla?

---

44. Ngabe wamuphani? .....

45. Uma sewake wancelisa, ukhona owake wakukhombisa ukuthi kunceliswa kanjani?

Yebo	1
Cha	2

46. Uma uthi YEBO, ubani?

---

47. Uma sewake wancelisa, ngabe kubuhlungu na?

Yebo	1
Cha	2

48. Uma sewake wancelisa, ucabanga ukuthi umntwana uyaneliseka emva kokuncela?

Yebo	1
Cha	2

49. Uma sewake wancelisa umntwana wakho, umncelisa ngesikhathi "solaka lwendlala" i.e. uma esekhalela ukuncela? Noma umncelila ulandeka uhlelo lokuncelise?

Yebo	1
Cha	2

50. Uma untanakho usuke wamncelisa, kunini lapho wamqalisa khona ukumncelisa?

Eqeda kuzalwa nje	1
Emva kwamahora ambalwa ezelwe	2
Emva kosuku ezelwe	3
Emva kwezinsuku ezimbili ezelwe	4
Emva kwezinsuku ezingaphezu kwezimbili ezelwe	5
Angazi	6

51. Uma umntwana enganceliswanga ibele masinyane emva kokuzalwa, wanceliswani futhi ngasiphi isizathu?

Cacisa ukondliwa komntwana engakalunceli ubisi	Isizathu

52. Uma umntwana wayenceliswa, ubani owakutshela ukuthi umtanakho umnike okunye ngaphandle kobisi lwebele futhi kwabayini isizathu salesisiphakamiso? **(QAPHELA MCWANINGI: buza njengombuzo ovulelekile. Anganika izimpendulo ezingaphezulu kweyodwa. Umama angadinga ukuphenywa uma kudingeka isizathu.)**

	Isinqumo sakho	Iseluleko sikamama	Iseluleko sikamamezala	Iseluleko sikagogo	Iseluleko sikayise womntwana	Iseluleko sikasisi/ omunye oyisihlobo	Iseluleko sabangani / omakhelwane	Iseluleko sabasebenzi basemthonjolampilo
Umntwana wayembile								
Umntwana wakhala kakhulu								
Ubisi lwaluluncane								
Ubisi olungenamsoco								
Umama wayegula								
Umntwana wayegula								
Umntwana wenqaba ibele								
Umama kwadingeka ayosebenza								
Izinkinga zamabele Izingono ezibuhlungu								
Wakhulelwa futhi								
Okunye-cacisa								

53. Uma ingane idla ukudla okwamanzi okungelona ubisi lwebele, ilunikezwa kanjani loluketshezi?

Ibhodlela	1
Inkomishi	2
Isipunu	3

54. Ukhona osewake waxoxa nawe ngokuthi lisetshenziswa kanjani ibhodlela ukondla umntwana?

Yebo	1
Cha	2

55. Uma impendulo ka 54 ithi YEBO, ubani owaxoxa nawe? **(QAPHELA MCWANINGI: Buza kube umbuzo ovulelekile)**

Osebenza emtholampilo	1
Umama/umamezala	2
Umngani	3
Okunye-cacisa	4

56. Kukhona ifomula oyithola mahhala emtholampilo okwamanje?

Yebo	1
Cha	2

57. Ukhona yini emtholampilo osewake wakukhombisa ukuthi ulenze kanjani ibhodlela lomntwana wakho?

Yebo	1
Cha	2

58. Kukhona osewake wafaka umtwana wakho ukuhlanza isisu (ukuchatha) or umkuzisa?

Yebo	1
Cha	2

59. Uma impendulo embuzweni 58 ithi YEBO, wayefakwani umntwana?

Amakhambi	1
Umuthi (umuthi wenyoni)	2
Uphondo	3
Okunye-cacisa uyacelwa	4

60. Ngabe umtanakho uyalincela idamu? **(QAPHELA MCWANINGI: asikho isidingo sokubuza uma ingane incela idamu ngesikhathi sengxoxo)**

Yebo	1
Cha	2

ISIQEPHU C: ULWAZI LUKAMAMA, ISIMOMQONDO, UMBONO KANYE NEZINKOLELO NGOKONDLIWA KWABANTWANA

61. Yisiphi isizathu esifika kuqala emqondweni wakho uma ingane ikhala? **(QAPHELA MCWANINGI: impendulo eyodwa kuphela elindelekile)**

Ingane imanzi	1
Ingane ifuna ukuthathwa	2
Ingane iyagula	3
Ingane ilambile	4
Ingane iyagodola	5
Okunye-cacisa uyacelwa	6

62. Ucabanga ukuthi kukhona ukudla okuthile okumele kunikezwe izingane ezingeni elithile lokukhula?

Yebo	1
Cha	2

63. Uma impendulo embuzweni 62 ithi YEBO, Shono izinga lokukhula, ukudla okuthile noma isiphuzo okumele kunikezwe nesizathu salokho

Izinga lokukhula losana	Ukudla/isiphuzo okumele sinikezwe	Isizathu

64. Ngokwenqubo yomndeni wakini, kukhona yini ukudla okuthile okungafanele kunikwe izingane?

Yebo	1
Cha	2

65. Uma impendulo ku 64 ithi YEBO, shono izinga lokukhula, ukudla okuthile noma isiphuzo okungafanele sinikwe izingane?

Izinga lokukhula losana	Ukudla/isiphuzo okumele sinikezwe	Isizathu

66. Ucabanga ukuthi umama womntwana (onezinyanga ezingaphansi kuka 6) udingani ukuze ondle kahle umntwana wakhe?

.....
.....
.....
.....

67. Uma ingane yakho iphathwa yisifo sohudo, ucabanga ukuthi yini isizathu esinqala?

---

68. Ucabonga ukuthu indlela upha nyayo ingawe yakho ukundla kunempilo? Uma kunayo kunanyo kanjamu?

---

69. Ngabe ungathanda ukulutholaphi ulwazi ngokondliwa komntwana wakho?

Emtholampilo wangakithi	1
Ekhaya	2
Ehholo lesonto langakithi	3
Ehholo lesikole sangakithi	4
Okunye-cacisa uyacelwa	5

70. Ungathanda ukuluthola kanjani ulwazi ngokondliwa komntwana wakho?

Ukuxoxa ngqo nabasebenzi basemtholampilo wangakini	1
Ukuxoxa ngqo nomngani	2
Ukuxoxa ngqo nesihlobo	3
Imihlanganywana nabanye omame?	4
Uhlelo lwasemsakazweni	5
Uhlelo lukamabonakude	6
Iphephandaba	7
Iphephabhuku isibonelo, Ubona, Idrum	8
Incwajana uye nayo ekhaya	9
Iposta	10
Ivido	11
Okunye - cacisa uyacelwa	12

71. Uma ungakaze ukhonjiswe ukuthi kunceliswa kanjani, ubungathanda ukuthola umuntu ozokukhombisa ukuthi kunceliswa kanjani?

Yebo	1
Cha	2

ISIQEPHU D: IZINTO EZINGAVIMBELA UKONDLIWA KAHLE KWABANTWANA

72. Ngabe umntwana wakho umondla ngendlela othanda ngayo? **(QAPHELA MCWANINGI: uma impendulo yalo mbuzo ithi YEBO, dlulela embuzweni 77)**

Yebo	1
Cha	2

73. Uma uthi CHA, ungathanda ukumondla kanjani umtanakho?

.....
.....
.....

74. Uma impendulo yakho kumbuzo 72 ithe CHA, ngabe wabukela kumuntu othize ukuthi yondliwa kanjani ingane yakho?

Yebo	1
Cha	2

75. Uma impendulo yakho kumbuzo 72 ithi CHA, ngubani owabukala ukonda umntwana wakho ngalendlela omondla ngayo njengamanje? **(QAPHELA MCWANINGI: buza kube umbuzo ovulelekile)**

Iseluleko sikamama	1
Iseluleko sikamamezala	2
Iseluleko sikagogo	3
Iseluleko sikayise wengane	4
Iseluleko sikasisi/esinye isihlobo	5
Iseluleko sabangani/omakhelwane	6

Iseluleko sabasebenzi basemtholampilo	7
Isinqumo sami	8

76. Uma impendulo yakho ku 72 ithi CHA, yini eyakwenza wondle umtanakho ngendlela omondla ngayo njengamanje?

Ukushoda kwesikhathi	1
Ukushoda kwemali	2
Ukushoda koxhaso	3
Impilo entekenteke kamama	4
Impilo entekenteke yomtwana	5
Izinkinga zamabele	6
Umama uyasebenza	7
Okunye	8

77. Ubani okusiza ukunakekela lengane? **(bdi)**

Akekho	1
Umama/umamezala	2
Ugogo	3
Ingane endala	4
Umngane/umakhelwane	5
Ubaba womntwana	6
Usisi/esinye isihlobo	7
Okunye	8

78. Ucabanga ukuthi unempilo?

Yebo	1
Cha	2

79. Uma impendulo yakho kumbuzo 78 ithi CHA, sekuyisikhathi esingakanani ungaphilile kahle?

Izinsuku ezimbalwa	1
Isonto	2
Amasonto ambalwa	3
Inyanga	4
Izinyanga ezimbalwa	5

80. Wawukuhlelile lokhukukhulelwa? **(bdi)**

Yebo	1
Cha	2

81. Ukhululekile ngendlela ophila ngayo? **(bdi)**

Yebo	1
Cha	2

82. Uzizwa ubalulekile? **(bdi)**

Yebo	1
Cha	2

83. Ucabanga ukuthi uthola uthando olwanele ngokomoya kubaba womntwana, umndeni nabangani?(**bdi)**

Yebo	1
Cha	2

84. Wenelisekile ngendlela ohlala ngayo nabantu ohlala nabu? (**bdi)**

Yebo	1
Cha	2

85. Ngabe ikhona ingcindezi ongaphansi kwayo njengamanje okuyizinkinga ezinjengoswela imali, ukungasebenzi, ukugula okukhulu noma ukushonelwa emndenini? (**bdi)**

Yebo	
Cha	

86. Ngabe wake wahlolwa isandulela-ngculazi (HIV) ngesikhathi usakhulelwe?

Yebo	1
Cha	2

87. Ngabe wazikhethela wena ukuthi uhlolwe?

Yebo	1
Cha	2

SIYABONGA UKUTHI USINIKEZE ISIKHATHI SAKHO UPHENDULE LEMI BUZO.

Annexure III: Fieldworker training programme

FIELDWORKER TRAINING PROGRAMME:

THE CURRENT INFANT FEEDING PRACTICES AND RELATED FACTORS OF ZULU MOTHERS WITH 0 - 6 MONTH OLD INFANTS ATTENDING BABY CLINICS IN CENTRAL DURBAN, KWAZULU-NATAL: AN EXPLORATORY STUDY .

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Day One: Wednesday 30 October 2002

- **Objectives of the training session**
- **Background and importance of the study**
- **Purpose of study and objectives**
- **Delimitations**
- **Assumptions**
- **Definition of terms**
- **Study design**
  - **Conducting a survey by means of face–to- face interviews**
  - **Characteristics of a survey**
  - **Advantages and disadvantages of the survey method**
  - **Field worker: role e. g. aiding respondent recall and important qualities**
- **Methods and procedures:**
  - **concepts determined by questionnaire**
  - **sampling frame**
  - **sampling technique**
  - **data collection (including piloting)**
- **Implementation of English version of questionnaire on two Zulu mothers**
- **Debriefing session involving respondents and field workers to determine consistency of recording between fieldworkers and how accurately recording of responses resempled the intended meaning of the mothers.**

Day two: Friday 1 November 2002

- **Training on interview skills conducted by AIDS counselor from Durban Institute of Technology**
- **Implementation of Zulu version of questionnaire on two Zulu mothers**
- **Debriefing session involving respondents and field workers (see detail Day 1)**
- **Discussion of time frame and logistics of study in terms of renumeration, working hours, transport and refreshments provided**

CONTENTS

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2. Background and importance of the study 4
3. Purpose of the study and objectives 7
4. Delimitations 8
5. Assumptions 9
6. Definition of terms 9
7. Study design 10
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   - Face–to–face interview 11
   - Role of fieldworker/interviewer 11
8. Methods and procedures 12
   - Concepts determined by questionnaire 12
   - Sampling frame 13
   - Sampling technique 14
   - Data collection 15
9. Time frame of study 15

SUMMARY OF RESEARCH

Exclusive breastfeeding for the first six months of an infant's life is propagated by the World Health Organisation (WHO), United Nations Children's Fund (UNICEF) and the South African National Department of Health. This recommendation implies that an infant should be given only breast milk during the first six months of life and that water, herbal tea or foods, except vitamins or prescribed medicine preparations, should be omitted. However, the high incidence of HIV/AIDS has complicated this universal recommendation. Due to the risk of HIV transmission through breast milk, bottle feeding is recommended as an alternative to breast-feeding.

Furthermore, despite the above recommendations, there is sufficient evidence that the most appropriate infant feeding options are not always chosen. In some cases this phenomenon can contribute to malnutrition due to unsafe replacement – or mixed feeding. Infant feeding practices are influenced by many factors. Ultimately mothers will feed their infants in a manner that they feel comfortable with.

In order to address the above problem, the aim of this study is to identify the current infant feeding practices of Zulu mothers with 0 – 6 month old infants attending baby clinics in Central Durban, KwaZulu-Natal and some of the important factors influencing their infant feeding decisions. The findings would facilitate the design of an education programme for health workers that takes into consideration the challenges that HIV/AIDS poses to infant feeding recommendations

BACKGROUND AND IMPORTANCE OF THE STUDY

According to Brown, Dewey & Allen (1998: 3), the term exclusive breastfeeding is used when all fluid, energy, and nutrients are provided by breastmilk, with the possible exception of small amounts of medicinal supplements. WHO recommendations (1995) advise that infants should be exclusively breast fed from birth to between four and six months of age. After screening 3000 references, the WHO revised their recommendation in 2001 by concluding that exclusive breastfeeding should be continued for six months (180 days) (Greiner 2001). This brings the WHO recommendations in line with the breastfeeding policy propagated by the United Nations Children's Fund (UNICEF) (Administrative Committee on Coordination Sub – Committee on Nutrition (ACC/SCN) 2000: 33).

The Integrated Nutrition Programme (INP) implemented by the Department of Health adopts UNICEF's conceptual framework which explains malnutrition as the outcome of interrelated, complex, basic, underlying and immediate causes. Subsequently one of the national goals of the INP is to enable all women to breastfeed their children exclusively up to about the first six months of life and thereafter to continue breastfeeding in addition to the introduction of appropriate complementary foods up to twenty four months of age (Department of Health, Directorate Nutrition 1998).

According to De Villiers (1997), the early introduction of supplementary foods seems to be the rule rather than the exception in South Africa. This observation has been justified by local researchers such as Croucher, Schloss and Bourne (2000); Faber, Oelofse, Kriek and Benade (1997); Delport, Becker and Bergh (1997); Richter (1994) and Odendaal (1988) that have all conducted surveys amongst urban blacks in order to determine infant feeding practices. This phenomenon is also echoed by Moodley, Linley and Saitowitz (1999) in an article reviewing the literature on breast – feeding policy and related issues in South Africa.

Williams, Baumslag and Jelliffe (1994: 119), explain that early mixed feeding is one of the factors that is responsible for the high mortality rate in infants in developing countries. Pinstrup–Andersen, Pelletier and Alderman (1995: 340), also state that inappropriate breastfeeding and weaning practices are critically important in most cases of malnutrition among children younger than two years of age. Furthermore, growth faltering of infants in developing countries due to incorrect infant feeding practices has been shown at the early age of two to three months (Davies–Adetugbo & Adetugbo 1997; Kustin, Kardjati & Van Steenbergen 1985).

In South Africa, growth faltering usually sets in during the weaning period (Vorster, Oosthuizen, Jerling, Veldman & Burger 1997: 26) and the eventual outcome is stunting (Faber, Oelofse, Kriek & Benade 1997). The latter

authors also believe that since stunting is an indication of longterm malnutrition, growth faltering during the first eighteen months of life could be, at least partly, due to poor infant feeding practices, especially after the introduction of complementary feeding. Data generated by the South African Vitamin A Consultative Group (SAVACG) (1996), indicated that one in four South African children aged six to seventy one months, are stunted. On a provincial level, the incidence of stunting in KwaZulu-Natal is one in six.

According to Steyn (2000), one of the main reasons for stunting is the fact that small children are not fed food that is sufficiently energy – dense often enough to meet their energy requirements. However, lack of food per se is not necessarily the primary cause, rather lack of information and access to energy dense foods.

According to Bobat (2000), following on the first reports that HIV was transmissible via breast milk, many studies were conducted looking at this association. The above author continues by stating that the consensus on vertical transmission of HIV by breast milk led to the recommendation that in developed countries, HIV–infected women should not breast feed their infants. However, in developing countries health workers were faced with the dilemma of whether or not to continue recommending breastfeeding by HIV–infected women. Coutsoudis (2000), points out that should HIV–1 infected women in developing countries opt to use breastmilk substitutes, they might be stigmatised in communities where exclusive breastfeeding is being promoted. This author continues by stating that where HIV – infected women have no option but to breastfeed, promotion of exclusive breastfeeding may be one way of increasing the safety of breastfeeding. These recommendations are based on the results of a study (Coutsoudis, Pillay, Spooner, Kuhn & Coovadia 1999) that suggested that the risk of transmission of HIV–1 is less with exclusive breastfeeding for at least 3 months than mixed feeding. In the light of the above evidence, Moodley, Linley and Saitowitz (1999) explain that HIV–transmission through breastmilk has complicated the advice one now gives on breastfeeding.

In 1996, a statement was issued by UNAIDS, stating that women in developing countries should be given the choice of feeding method, after counselling on the risks and benefits of breast– versus bottle feeding (UNAIDS 1996). Ultimately, the choices women make, depend on the environment they live in. Influences by partners, elders, friends and family can play a role in their infant feeding decision as well as their social circumstances and finances (Bobat 2000).

The incidence of Human Immuno Deficiency Virus (HIV) is high (nationally 23% of women attending antenatal clinics were infected with HIV in 1998) (South African Institute of Race Relations 2000: 218) and in KwaZulu-Natal the provincial HIV prevalence estimate for female clinic attendees was 33,5% in 2001, with the HIV prevalence trend by age group on a national level being the highest in the 25 – 29 year old category (Ntsaluba 2002). Inappropriate

infant feeding practices may therefore provide the infant with the worst scenario: exposure to the HIV virus as well as interference with breast milk's anti–infective properties. The observations by the above authors point towards the importance of educational strategies to improve infant feeding practices.

According to Onofiok and Nnanyelugo (1998), training and education is the answer to improving infant feeding practices. However, Sachdev and Mehotra (1995) state that the factors responsible for early termination of breastfeeding have intra– and inter–regional variations. Faber and Benade (1999) add to these sentiments by stating that geographical differences in malnutrition and dietary practice should be taken into account when planning cost–effective nutritional intervention programmes. Furthermore, Graeff, Elder and Mills Booth (1993: 3), point out that because most developing countries have a variety of cultural, ethnic, and linguistic groups within their borders, the same health messages often cannot be understood nationwide. The ACC/SCN (2000: 41) also stresses that the challenge from a public health perspective is to translate the vast scientific literature on breastfeeding and complementary feeding recommendations into effective interventions that are understood and accepted by the population at large.

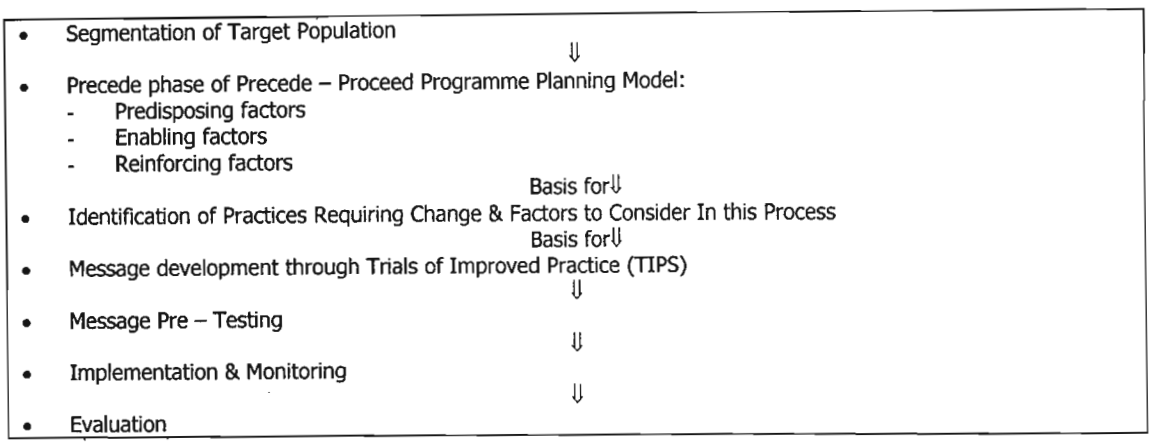
There is substantial evidence to suggest that the use of theory in program design, implementation and evaluation, will significantly improve the chances of success in achieving planned program objectives. The application of theories assist the researcher in gaining insight into the nature of the problem being addressed such as the focus of the intervention, the needs and motivations of the target population and the context within which the intervention should take place. This facilitates a better "fit" between the problem and the program designed to address it (American Dietetic Association 1998; Nutbeam & Harris 1998: 6,11; Contento, Balch, Bronner, Lytle, Maloney, Olson & Swadener1995).

Due to the complexity of the dietary change process and to ensure that programme planning is done in a logical sequence, integration of some health education theories and models, enable a better understanding and facilitation of the health behavioural change process (Contento et al. 1995). Application of integrated models such as the Precede–Proceed model (Weber Cullen, Bartholomew, Parcel & Kok 1998; Stanhope & Lancaster 1996: 251; Graeff, Elder, Mills Booth 1993: 23) in planning a health education programme, not only highlights the complexity of dietary change, but also the dynamic interactions among numerous personal, behavioural and environmental variables, the nature of the change process and the importance of a systematic process for designing nutrition education interventions (Contento et al. 1995).

An audit of locally implemented nutrition education interventions revealed that there is a definite need for well planned and structured nutrition education strategies promoting safe infant feeding practices.

As a result of the above, a Programme Planning Model (PPM) was developed in collaboration with experts in the field through facilitated group discussion (Kassier, Senekal, Ross & Maunder 2001) (figure 1). The developed PPM will ensure that: (1) the actual needs/problems of the target group are being addressed; (2) message content and presentation is culturally specific and tailored to the needs of the target group and (3) there is as greater likelihood for behavioural change in the target group.

Figure 1: Programme Planning Model



Source: Kassier et al. (2001)

The results obtained in the proposed study, will serve as a component of the PPM (Kassier et al. 2001) to determine the current infant feeding practices of the target group as well as some of the factors that influence their infant feeding decisions. This will facilitate the design of an education programme for health workers that takes into consideration the challenges that HIV/AIDS poses to infant feeding recommendations. It would also be used for the development of the necessary nutrition education messages to promote safe infant feeding among Zulu women with infants 0 – 6 months of age.

PURPOSE OF THE STUDY AND OBJECTIVES

The purpose of this study is to identify the current infant feeding practices and some of the important factors that influence the infant feeding decisions of Zulu mothers with 0 – 6 month old infants attending baby clinics in Central Durban, KwaZulu-Natal.

The First Objective

The first objective is to identify the socio-demographic factors describing the target group.

The Second Objective

The second objective is to determine the current infant feeding practices of the target group.

The Third Objective
The third objective is to determine factors such as knowledge, attitudes, perceptions and beliefs of the target group in relation to current infant feeding practices.

The Fourth Objective
The fourth objective is to determine the role of family, friends and health professionals in current infant feeding practices.

The Fifth Objective
The fifth objective is to determine the availability of resources that influence current infant feeding practices of the target group such as time, money, infant care support and access to health care facilities and barriers that are detrimental to appropriate infant feeding practices such as poor emotional and physical health, lack of control over available resources and a lack of support from family, friends and health professionals.

The Sixth Objective
The seventh objective is to classify mothers into categories in terms of whether they practice exclusive breastfeeding, predominant breastfeeding, partial breastfeeding/mixed feeding or bottle feeding and to describe the characteristics of mothers that make the above infant feeding choices.

THE DELIMITATIONS

1.
The study will be limited to Zulu mothers, older than eighteen years with infants aged 0 – 6 months attending baby clinics in Central Durban. The reason for this limitation is that the literature revealed that infant feeding practices are very culturally specific. Furthermore, teenagers experience many unique socio–demographic factors that influence their infant feeding decisions. That is why the above factors are considered to be limitations in terms of extrapolating the data to a broader target group.

2.
The study will be limited to determining current infant feeding practices and some of the factors that influence these practices.

3.
The study will not determine the quantity of supplementary foods and liquids ingested by infants under the care of the target group.

THE ASSUMPTIONS

1. The sample will be representative of the target population.

2. Data generated by the mothers interviewed would be positive, constructive and honest.

3. It is assumed that because interviews will be conducted in the mother tongue of the respondents (Zulu), language and cultural barriers between respondents and field workers will be overcome.

THE DEFINITION OF TERMS

Exclusive Breastfeeding

The complete absence of water, herbal tea or foods, except vitamin/mineral drops, syrups and medicine preparations (Kersting & Dulon 2001; Department of Health & UNICEF 2000: 6; Smith & Kuhn 2000; Brown et al. 1998: 3; Gamatie 1997 & Greiner 1996).

Predominant Breastfeeding

The infant's predominant source of nutrition is breast milk. However, the infant may also have received water or water – based drinks (including sweetened or flavoured water, teas, infusions, etc.); fruit juice; Oral Rehydration Salts (ORS); drop and syrup forms of vitamins, minerals, and medicines; folk fluids (in limited quantities). With the exception of fruit juice and sugar – water, no food – based fluid is allowed under this definition (WHO 2002: 4; Kersting & Dulon 2001). From the above it is clear that the difference between exclusive – and predominant breastfeeding is that energy – dense liquids such as infant formula does not accompany the breastfeeding.

Partial Breastfeeding (mixed feeding)

According to the WHO (2002: 4) and Sachdev and Mehotra (1995), this term refers to giving the baby some breast feeds, and some artificial feeds, either milk or cereal or other food.

Replacement Feeding (bottle feeding/non breastfeeding)

Replacement feeding refers to the process of feeding a child who is not receiving any breast milk with a diet that provides all the nutrients the child needs. During the first six months this should be with a suitable breastmilk substitute, commercial formula, or home prepared formula with micronutrient supplements. After six months it should be with a suitable breastmilk substitute, and complementary foods made from appropriately prepared and nutrient-enrched family foods, given three times a day. If suitable breast milk substitutes are not available, appropriately prepared family foods should be further enriched and given five times a day (WHO 2002: 5; Kersting & Dulon 2001).

Infant

An infant can be described as a child younger than 12 months of age (Brown et al. 1998: 3).

THE STUDY DESIGN

Survey by Means of Face–to–Face Interview

For the purpose of this study, information on current infant feeding practices as well as some of the factors that influence these practices, will be collected by means of a structured interview schedule with closed - and open ended questions.

Definition

Many respondents are sampled that answer the same questions. Many variables are measured, many hypothesis are tested and temporal order is inferred from questions about past behaviour, experience and characteristics. An association between variables is measured with statistical techniques. Variables are measured that represent alternative explanations, then statistically examine their effects to rule out alternative explanations (Neuman 1997: 231).

Characteristics of a Survey

- used for obtaining biographical data such as age, qualifications and income; information regarding typical behaviour, opinions, beliefs and convictions; and attitude (Welman & Kruger 1999: 151)

Advantages and Disadvantages of Survey Method

Advantages

- data collection over shorter period of time allows comparison of respondent opinions (Welman & Kruger 1999: 95)
- better co – operation of respondents leads to greater accuracy of information obtained, especially about sensitive issues (Welman & Kruger 1999: 95)

Disadvantages

- respondents may have insufficient knowledge about themselves or may be unable to verbalise their feelings (Welman & Kruger 1999: 147)
- respondents may deliberately provide incorrect answers with a view to putting themselves in a positive or negative light (Welman & Kruger 1999: 147)
- can be complex and expensive (Neuman 1997: 232)

- involves coordinating many people and steps (Neuman 1997: 232)
- administration requires organization and accurate record keeping (Neuman 1997: 232)

Advantages and Disadvantages of a Face–to–Face Interview

Advantages

- have highest response rate and permit the longest questionnaires (Neuman 1997: 253)
- interviewers can use non – verbal communication (Neuman 1997: 253)
- well – trained interviewers can ask all types of questions, can ask complex questions and can use extensive probes (Neuman 1997: 253)

Disadvantages

- high cost in terms of training, supervision and personnel (Neuman 1997: 253)
- greater interviewer bias (Neuman 1997: 253)
- appearance, tone of voice and question wording of the interviewer may affect the respondent (Neuman 1997: 253)

Role of the Fieldworker/interviewer

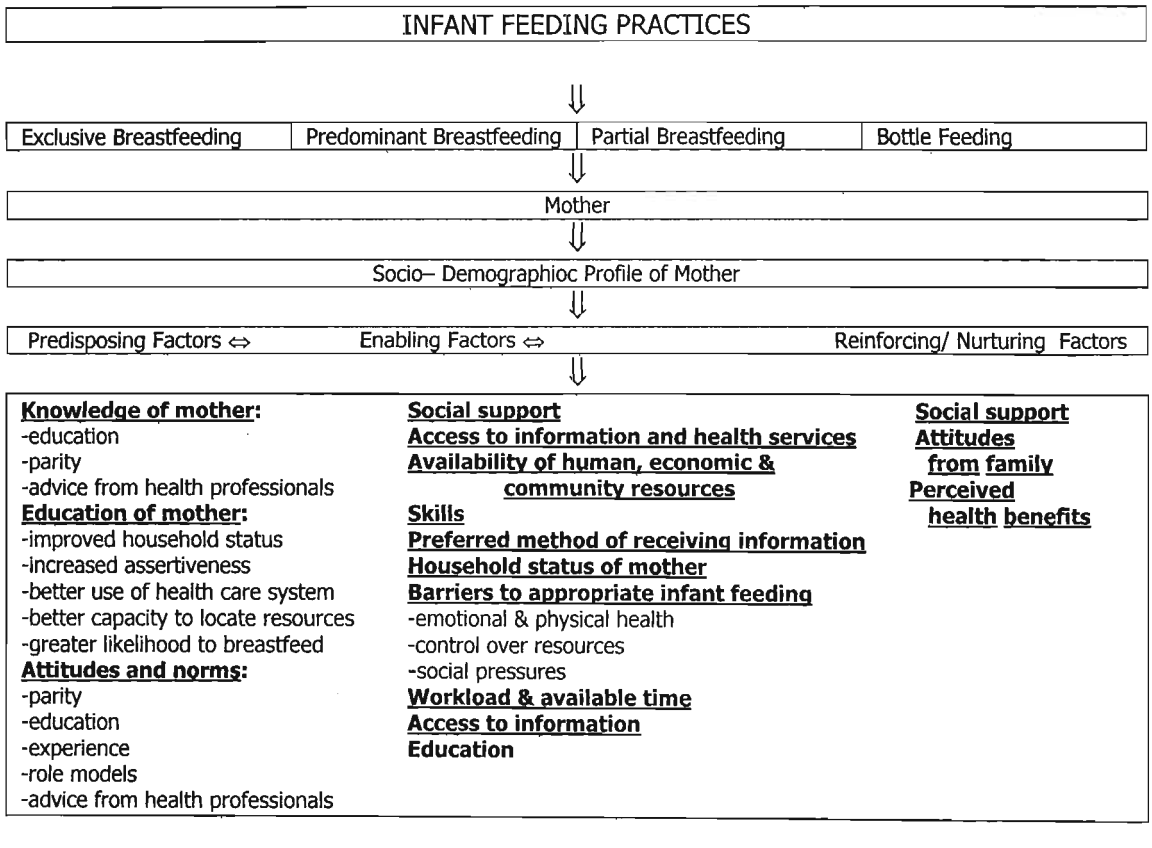
- training ensures that more accurate data is being collected (Welman & Kruger 1999: 95)
- can aid respondent recall due to the fact that one's ability to recall declines over time. This memory decline is affected by topic, events occurring simultaneously and subsequently, the significance of an event for a person, situational conditions and the respondent's need to have internal consistency. Respondent recall can be aided by allowing extra thinking time, fixed time frame or location references (Neuman 1997: 237)
- can obtain cooperation and build rapport, yet remains neutral and objective (Neuman 1997: 254)
- tries to reduce embarrassment, fear and suspicion so that respondent feels comfortable to reveal information (Neuman 1997: 254)
- explains nature of research or give hints about social role in an interview (Neuman 1997: 254)
- monitors pace and direction of social interaction as well as content of answers and the behaviour of respondents (Neuman 1997: 254)
- are non-judgemental and do not reveal their opinions, verbally or nonverbally (e.g. by look or shock) (Neuman 1997: 254)
- does not try to change the respondent's opinions or beliefs (Neuman 1997: 256)
- tries to obtain direct answers to specific questions (Neuman 1997: 256)
- does not correct respondent's factual errors (Neuman 1997: 256)

- steers respondent away from obtaining interviewer's opinion and politely redirects the respondent by indicating that such questions are inappropriate (Neuman 1997: 255)
- attempt's to maintain a consistently warm but serious and objective tone throughout (Neuman 1997: 256)
- creates a sense of trust (Neuman 1997: 256)
- define's situation, ensures that respondent's have the information sought, understands what is expected, gives relevant answers, are motivated, cooperates and gives serious answers (Neuman 1997: 256)
- documents exact words of respondent to open – ended questions (Neuman 1997: 257)
- knows how & when to probe – asks neutral question to clarify an ambiguous answer, to complete an incomplete answer or to obtain a relevant response. Examples of probes are: a 3 – 5 second pause, non – verbal communication (tilting of head, raised eyebrows and eye contact), repeating the question or reply and then pausing or asking a neutral question such as: "Any other reasons?", "Can you tell me more about that?", "How do you mean?", "Could you explain more for me?"
- helps respondent feel that they can give any truthful answer (Neuman 1997: 255)

METHODS AND PROCEDURES

Concepts determined by questionnaire

Figure 2: Conceptual framework used for questionnaire development



Traditional beliefs
Values
Self confidence, self esteem:
-parity
-age
-education
-socio – economic status
-feeding difficulties
-presence of depression
Motivation
Perceptions

Adapted from: Beck (2002); ACCN/SCN (2000); Satia, Patterson, Tayler, Cheney, Shiu – Thornton, Chitnarong & Kristal (2000); Cohen, Brown, Rivera & Dewey (1999); Reed, McCarron Meeks, Nguyen, Cross & Garrison (1998); Davies–Adetugbo (1997); Engle, Lhotska & Armstrong (1997); Steyn (1997); Underwood, Pridham, Brown, Clark, Frazier, Limbo, Schroender & Thoyre (1997); Hubley (1993); Green & Kreuter (1992)

Sampling frame

The survey will be conducted amongst 300 Zulu mothers of infants that fall into three age categories at the time of the study and visit the sampled baby clinics at the time of the study. The sample size was chosen in order to ensure a large enough sample within each of the three infant age categories depicted in figure 3. Dividing the sampling frame into three age strata will ensure a more accurate view of current infant feeding practices amongst the target group.

The target population will not be segmented according to for example HIV status, whether they are primiparas or multiparas or whether their infants had a low birth weight. Segmentation according to gender group of the infants will also not be practised.

Where resources are limited, a nutrition education programme is delivered to a target group as a whole. It is therefore not realistic to segment the target population for data collection purposes as the data generated would be used for the planning of a broad education strategy. Should it be possible to deliver separate education messages to sub–sections of a target population, it would require additional infrastructure at a primary health care level and could also be viewed as stigmatisation of the target group at community level.

Clinics in which a nutrition education programme for research purposes is being implemented, for example the Cato Manor Exclusive Breastfeeding Promotion Project (Bentley 2001), will not be sampled for this study. Non – PMTCT (Prevention of Mother to Child Transmission of HIV) Clinics have been selected according to convenience sampling from those made available by the Ethekwini Municipality in Central Durban. Clinics selected are those that are predominantly attended by Zulu individuals in accordance with information supplied by Ethekwwini Municipality (Sahadeo 2002).

A equal number of PMTCT clinics were selected according to whether the clinic attendees were mainly Zulu individuals (Moodley 2002) (currently there are only four PMTCTclinics in operation in Central Durban).

Figure 3: Sampling frame for implementation of the survey

CENTRAL DURBAN (N =300)						
	Non – PMTCT Clinics (n = 150)			PMTCT Clinics (n = 150)		
	Lancers Road (n = 48)	Glen Earle (Newlands East) (n = 46)	Lamont (n = 56)	Kwamashu Polyclinic (n = 42)	Umlazi Section K Clinic (n = 36)	Umlazi Section D Clinic (n = 71)
Mothers with infants 0-6 weeks	16	15	19	14	12	24
Mothers with infants 6 to 14 weeks	16	15	19	14	12	24
Mothers with infants Older than 14 weeks to 6 months	16	15	19	14	12	24

Sampling technique

Due to cost and time constraints, Zulu mothers of infants 0 – 6 months will be selected by means of the following procedure: (1) The sampling frame was made up of the amount of monthly clinic attendees for children under 5 years of age visiting non–PMTCT clinics and the average amount of pre HIV – test counseled mothers visiting the respective PMTCT clinics. (Statistics on the amount of infants visiting the respective baby clinics on a monthly basis is not available). (2) The amount of individuals interviewed per clinic was determined proportionately to the statistics cited under (1). Subsequently the amount of respondents per age category in each clinic was determined by dividing the figure obtained under (2) by three. On a particular day, respondents will be selected by means of systematic random sampling. The first infant visiting the clinic on a particular day will be sampled. From then on every third infant in the queue will be selected until the appropriate amount of infants per age category from a particular clinic is selected to obtain the total sample size. Should an infant however not meet the exclusion criteria cited in the questionnaire, the next infant will be selected and so on.

Data collection

The structured questionnaire will be translated into Zulu and will be pre – tested in a pilot study representing 5% of the total sample size (n= 15) prior to implementation. Piloting will be done in a clinic not forming part of the sampled clinics to determine redundant questions, questions that need to be reworded, ambiguous questions and the appropriate statistical methods for processing data.

TIME FRAME OF THE STUDY

30/10 – 1/11:	Fieldworker training conducted at Durban Institute of Technology
28/10 – 1/11:	Translation of questionnaire into Zulu Adaption of English questionnaire based on fieldworker training Adaption of Zulu questionnaire based on fieldworker training and back translation of final version of Zulu questionnaire
4/11 – 8/11:	Piloting of questionnaire at Point Road Clinic followed by daily debriefing session between researcher and fieldworkers
11/11 – 15/11:	Survey at Lancers Road Clinic (Tuesdays to Fridays)
18/11 – 22/11:	Survey at Glen Earle (Mondays, Wednesdays & Fridays) and Lamontville (Monday to Friday)
25/11 – 29/11:	Survey at Kwamashu Polyclinic (6 weeks follow – up) and Rydalvale Clinic (Well – baby clinic for older infants)
2/12 – 6/12:	Survey Umlazi section D clinic
9/12 – 13/12:	Survey Umlazi section K clinic

Annexure IV: Ethics approval of study

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Ms SM Kassier
C/o department of Dietetics
University of Natal
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12 January 2002

Dear Ms Kassier

PROTOCOL:. Current feeding practices and related predisposing, enabling and reinforcing factors of the primary caregivers of 0-6 month old Zulu infants attending baby clinics in North Central Durban, KwaZulu Natal: an exploratory study. SM Kassier. Dietetics, Pmb. Ref E151/01

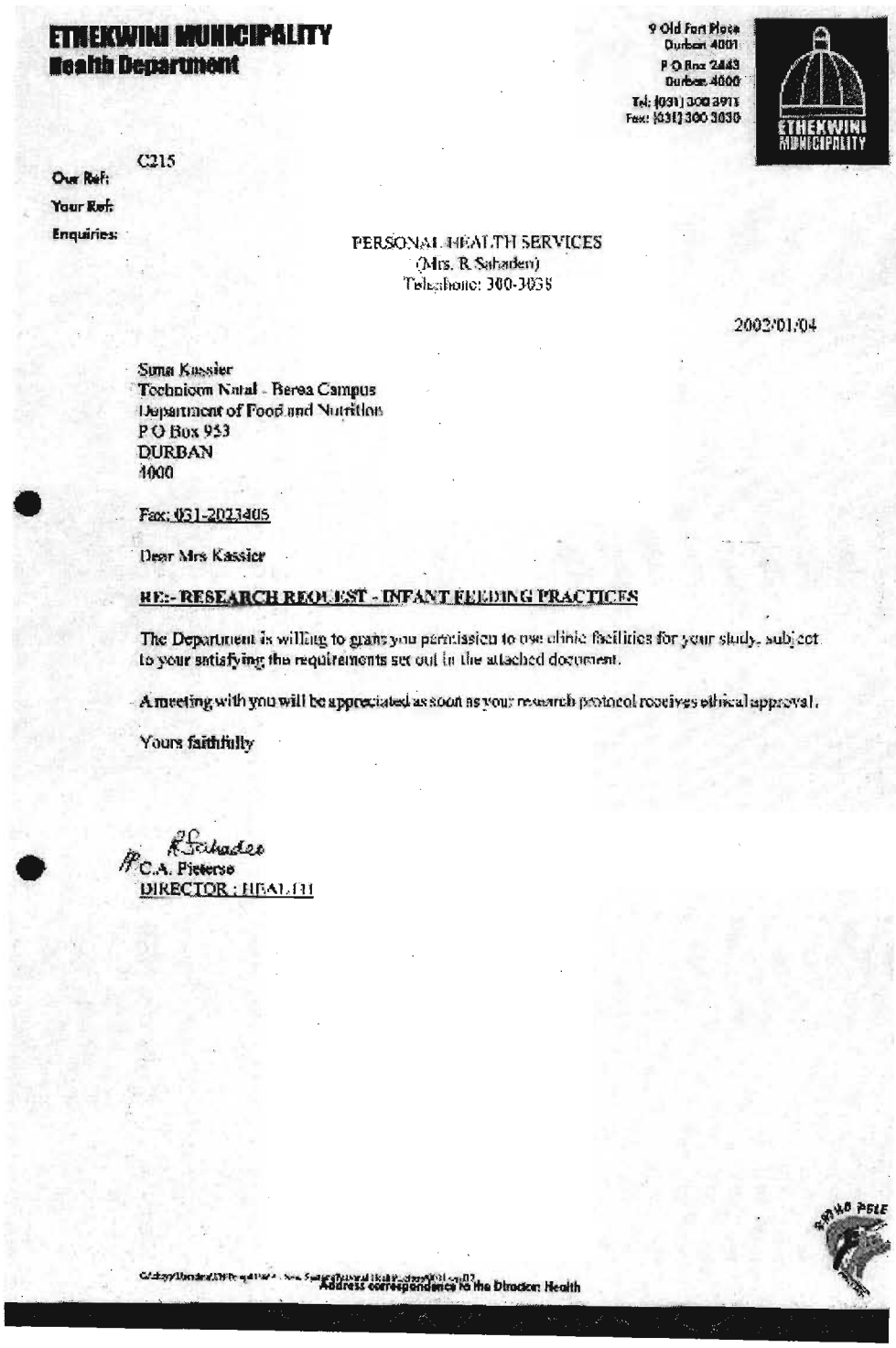
The Research Ethics Committee has considered the abovementioned application and found it acceptable. Approval was also given for the Zulu translation of the Informed Consent

Full ethical approval is granted as of this day.

Yours sincerely

Nancy Wintrad
Postgraduate Administration
Awfelhic/master.2

Annexure V: Permission for access to non–PMTCT clinics



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ETHEKWINI MUNICIPALITY

Our Ref: C215
Your Ref:
Enquiries:

PERSONAL HEALTH SERVICES
(Mrs. R Sahaden)
Telephone: 300-3035

2002/01/04

Suna Kassier
Technicon Natal - Berea Campus
Department of Food and Nutrition
P O Box 953
DURBAN
4000

Fax: 031-2023405

Dear Mrs Kassier

RE:- RESEARCH REQUEST - INFANT FEEDING PRACTICES

The Department is willing to grant you permission to use clinic facilities for your study, subject to your satisfying the requirements set out in the attached document.

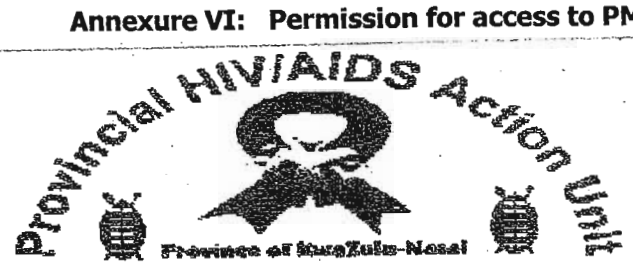
A meeting with you will be appreciated as soon as your research protocol receives ethical approval.

Yours faithfully

R Sahaden
for C.A. Pieterse
DIRECTOR : HEALTH

Address correspondence to the Director: Health

Annexure VI: Permission for access to PMTCT clinics



PMTCT PROGRAMME
2nd Floor Nedbank House Building
61 Gale Street
Durban
4001

Tel: 031 - 3077225
Fax: 031 - 3075592

ENQ: Mrs S. Sithole
DATE: 21 Nov. 2002

TO: Ms Suna Kassier
The DIT

FAX: 031 – 2042795

DATES FOR THE STUDY AT THE CLINICS

The following Clinics have responded positively, and I need to inform them on what dates to expect your team.

Lancers Road	= Completed
Kwa – Mashu Poly Clinic	= 26 – 29 November 02
Umlazi section D	= ?
Umlazi section K	= ?

S'ne. Sithole
Deputy Project Manager
(Infant feeding and counseling)

Annexure VII: English version of respondent information sheet

Department of Dietetics and Community Resources
University of Natal

PATIENT INFORMATION SHEET:
STUDY CONDUCTED TO INVESTIGATE THE INFANT FEEDING PRACTICESAND RELATED FACTORS OF ZULU MOTHERS WITH BABIES YOUNGER THAN SIX MONTHS OF AGE ON BEHALF OF THE DEPARTMENT OF DIETETICS AND COMMUNITY RESOURCES, UNIVESITY OF NATAL

Good day. Thank you for agreeing to talk to a field worker to discuss the way you feed your baby and all the things that influence your decision regarding the feeding of your baby.

The information gathered through this study will be used to make recommendations for the development of an education programme for nursing staff and health workers in order to give pregnant Zulu women and mothers of young babies the best advice regardibg the feding of their babies to ensure that their babies stay healthy.

Annexure VIII: Zulu version of respondent information sheet

DEPARTMENT OF DIETETICS AND COMMUNITY RESOURCES
UNIVERSITY OF NATAL

IPHEPHA LOLWAZI

UHLOLOVO OLWENZIWAYO NGOKUPHA IZINGANE EZIZELWE EZINGAPHANSI KWE ZINYANGA EZIYISITHUPHA NGOMAMA ABAKHULUMA ISIZULU LOKHU KWENZIWELA I DEPARTMENT OF DIETICS AND COMMUNITY RESOURCES, UNIVERSITY OF NATAL.

Sawubona. Siyabonga ngokuba uvume ukukhuluma abagcwaningi. Uzobe ekubuza imibuzo ngendlela ofunza ngayo umntwana wakho kanye nezizathu ezenza ukuba ukhethe lendlela omufunza ngayo umntwana wakho.

Lonke ulwazi oluzotholakala kuloluhlolovo luzosetshenziselwa ekwenzeni izeluleko ukuze kwenziwe uhlelo lokufundisa abaHlengikazi kanye nabasebenzi beZempilo ukuze bakwazi ukweluleka o-Mama abakhuluma isiZulu abazithwele (Khulelwe) kanye noMama abanezingane ezincane. Loluhlelo luzosiza ukuba aba-Hlengikazi kanye nabasebenzi be-Zempilo bakwazi ukunika izeluleko koMama ngokupha abantwana babo ukuze abantwana bahlale benempilo.

Annexure IX: Additional data

Description of infants			
	Total sample (N = 300)	**Non–PMTCT (n = 150)**	**PMTCT (n = 150)**
1. Mean age (weeks)	10,41 (SD 6,733)	10,60 (SD 6,958)	10,22 (SD 6,518) Indep. samples t – test: 0,626 95% CI
Socio–demographic profile of mothers			
	Total sample (N = 300)	**Non–PMTCT (n = 150)**	**PMTCT (n = 150)**
8. Mean years spent in school		10,55 (SD 2,874)	10,25 (SD 2,798) Indep. samples t – test: 0,360 95% CI
10. Mean amount of days spent working: • 1 – 2 days • 3 – 4 days • 5 – 6 days • 7 days	 8,1% (n=3) 8,1% (n=3) 70,2 % (n=26) 13,5 % (n=5)	 4,68 (SD 1,393)	 5,47 (SD 1,246)
11. Mean amount of hours away from home		8,73 (SD 2,120)	9,53 (SD 4,438)
12. Source of family income: • Full time employment • Part time/casual • Self employed • Pension/ Disability grant/ Child maintenance • Subsistence/ no income	 54,3% (n = 163) 28,0% (n = 84) 5,7% (n = 17) 9,3% (n = 28) 2,6% (n = 8)	 56,7% (n = 85) 24,0% (n = 36) 8,0% (n = 12) 10,0% (n = 15) 1,3% (n = 2)	 52,0% (n = 78) 32,0% (n = 48) 3,3% (n = 5) 8,7% (n = 13) 4,0% (n = 6)
14. Known income	47,7% (n = 141)	55,3% (n = 83)	38,9% (n = 58)
14. Income categories: • 0 – R500	 11,3% (n = 34)	 13,3% (n = 20)	 9,4% (n = 14)

• R500 – R1000 • R1000 – R2000 • R2000 – R3000 • R3000 – R4000 • R4000+	15,7% (n = 47) 9,7% (n = 29) 3,3% (n = 10) 1,7% (n = 5) 5,3% (n = 16)	18,7% (n = 28) 10,0% (n = 15) 4,0% (n = 6) 2,7% (n = 4) 6,7% (n = 10)	12,8% (n = 19) 9,4% (n = 14) 2,7% (n = 4) 0,7% (n = 1) 4,0% (n = 6)
16. Mean no. of people per house	3,76 (SD 2,160)	3,55 (SD 2,100)	3,97 (SD 2,206) Pearson chi – square: 0.279 df:7 95% CI
17. Mean no. of rooms per house		2,92 (SD 1,223)	3,18 (SD 1,075) Pearson chi – square: 0,117 df:3 95% CI
18. Mean no. of bedrooms per house		1,99 (SD 0,962)	2,01 (SD 0,867) Pearson chi – square: 0,138 df:3 95% CI
20. Outside water source: Treating water: 21. Treatment method: • Boil • Jik	 40,0% (n = 120) 20,8% (n = 25) 62,5% (n = 15) 41,7% (n = 10)	 25,3% (n = 38) 21,1% (n = 8) 75,0% (n = 6) 25,0% (n = 2)	 54,7% (n = 82) 20,7% (n = 17) Pearson chi – square: 0.849 df:1 95% CI 52,9% (n = 9) 47,1% (n = 8) Pearson chi – square: 0.294 df:1 95% CI

Accessibility and use of health care facilities during pregnancy

	Total sample (N = 300)	Non–PMTCT (n = 150)	PMTCT (n =150)
23. Used clinic during pregnancy	95,0 % (n = 285)	93,0% (n = 140)	96,7% (n = 145) Pearson's chi – square: 0,185 df:1 95% CI
		8,33 (SD 2,346)	7,45 (SD 2,478)

Antenatal education

	Total sample (N = 300)	Non–PMTCT (n = 150)	PMTCT (n = 150)
26B. Content of information:			
• Breast feed (B/F)	34,6% (n = 64)	41,2% (n= 35)	29,0% (n = 29)
• B/F exclusively/ 6 months	33,0% (n = 61)	21,2% (n =18)	43,0% (n = 43)
• Diet of B/F mother	8,6% (n = 16)	8,2% (n = 7)	9,0% (n = 9)
• Health of B/milk	4,3% (n = 8)	4,7% (n = 4)	4,0% (n = 4)
• B/F for 2 years	2,2% (n= 4)	3,5% (n = 3)	1,0% (n = 1)
• Advice about solids	9,7% (n = 18)	11,8% (n= 10)	8,0% (n = 8)
• Breast – and bottle feeding advice	3,8% (n =7)	3,5% (n = 3)	4,0% (n = 4)
• B/F till 6 months if HIV+	1,1% (n = 2)	2,3% (n = 2)	0,0% (n = 0)

Postnatal education

	Total sample (N = 300)	Non–PMTCT (n = 150)	PMTCT (n = 150)
27. Visited before First visit	83,7% (n = 251) 16,3 (n = 49)	88,0% (n = 132) 12,0% (n = 18)	80,0% (n = 120) 20,0% (n = 30) Pearson's chi – square: 0,055 df:1 95% CI

28A. Most frequent clinic use: (more than one option)			
• Infant illness	25,1% (n = 73)	21,1% (n = 31)	29,2% (n = 42)
• Own illness	4,5% (n = 13)	4,1% (n = 6)	4,9% (n = 7)
• Family planning	3,4% (n = 10)	4,1% (n = 6)	2,8% (n = 4)
• Immunization	67,4% (n = 196)	70,1% (n = 104)	63,2% (n = 91)
• Baby check up	5,1% (n = 44)	17,0% (n = 25)	13,2% (n = 18)
28B. Specify illness:			
• Rash	22,0% (n = 11)	25,0% (n = 5)	20,0% (n = 6)
• Chest infection	14,0% (n = 7)	20,0% (n = 4)	10,0% (n = 3)
• Eye & ear infection	14,0% (n = 7)	5,0% (n = 1)	20,0% (n = 6)
• Flu & cold	44,0% (n = 22)	40,0% (n = 8)	46,7% (n = 14)
• Constipation	2,0% (n = 1)	5,0% (n = 1)	0,0% (n = 0)
• Diarrhoea	2,0% (n = 1)	5,0% (n = 1)	0,0% (n = 0)
30A. Who gave the info: (more than one option)			
• Professional nurse	55,2% (n = 79)	54,7% (n = 35)	55,7% (n = 44)
• Staff nurse	26,6% (n = 38)	21,9% (n = 14)	30,4% (n = 24)
• Counselor	2,8% (n = 4)	0,0% (n = (0)	5,1% (n = 4)
• Doctor	2,8% (n = 4)	6,3% (n = 4)	0,0% (n = 0)
• Mother/grandmother	6,3% (n = 9)	7,8% (n = 5)	5,1% (n = 4)
• Other mothers/ sister/friends	6,3% (n =9)	9,4% (n = 6)	3,8% (n = 3)
30B. What were you told: (more than one option)			
• Breast feed (B/F)	32,9% (n = 47)	45,3% (n = 29)	22,8% (n = 18)
• B/F exclusively/6 months	32,2 % (n = 46)	18,8% (n = 12)	43,0% (n = 34)
• Advice about solids	16,8% (n = 24)	17,2% (n =11)	16,5% (n = 13)
• Advantages of B/F	2,8% (n = 4)	1,6% (n =1)	3,8% (n = 3)
• B/F until 2 years	2,3% (n = 4)	1,6% (n =1)	3,8% (n = 3)
• Feeding hygiene	2,1% (n = 3)	4,7% (n =3)	0,0% (n = 0)
• Bottle/F advice	9,1% (n = 13)	7,8% (n = 5)	10,1% (n = 8)
31. Follow the advice	87,7% (n = 136)	88,4% (n = 61)	87,2% (n = 75) Pearson's chi – square: 0,821 df: 1 95% CI
32A. What part of advice is followed:			
• B/F advice	70,6% (n = 96)	71,0% (n = 44)	70,3% (n = 52)
• Advice on solids	19,9% (n = 27)	19,4% (n = 12)	20,3% (n = 15)
• Bottle/F advice	7,4% (n = 10)	4,8% (n = 3)	9,5% (n = 7)
32 B. Why is advice followed:	(advice received by n = 142, all or part of it followed by n = 136)	(advice received by n = 63, all or part of it followed by n = 61)	(advice received by n = 79,all or part of it followed by n = 75)
• Protection against disease	45,9% (n = 62)	48,4% (n = 30)	43,8% (n = 32)
• Convenience	5,9% (n = 8)	3,2% (n =2)	8,2% (n = 6)
• Nutritious	5,2% (n = 7)	1,6% (n = 1)	8,2% (n = 6)
• Mother & baby love B/F	2,2% (n = 3)	3,2% (n = 2)	1,4% (n = 1)
• Growth	8,1% (n =11)	6,5% (n = 4)	9,6% (n = 7)
• Satisfies appetite	8,1% (n =11)	6,5% (n = 4)	9,6% (n = 7)
• No money	5,2% (n =7)	1,6% (n = 1)	12,3% (n = 6)
• Following clinic advice	5,2% (n = 7)	8,1% (n = 5)	2,7% (n = 2)
• Breast problems	3,0% (n =4)	0,0% (n = 0)	5,5% (n = 4)
• Don't know	3,75 (n = 5)	6,5% (n = 4)	1,4% (n = 1)
• Too young for solids	3,0% (n =4)	4,8% (n = 3)	1,4% (n = 1)
• Mother not working	1,5% (n=2)	1,6% (n = 1)	1,4% (n = 1)
• Sick mother	1,5% (n=2)	0,0% (n = 0)	2,7% (n = 2)

33A. What part is not followed			
• B/F till 6 months	33,3% (n = 2)	50,0% (n = 1)	25,0% (n = 1)
• B/F exclusively	50, 0% (n = 3)	0,0% (n= 0)	75,)% (n = 3)
• Feed purity	16,7% (n = 1)	50,0% (n = 1)	0,0% (n = 0)
33B. Why is it not followed:			
• Hungry baby	33,3% (n = 2)	50,0% (n = 1)	25,5% (n = 1)
• Mother works/ had to go to school	33,3% (n = 2)	50,0% (n = 1)	25,5% (n = 1)
• Breast problems	16,7% (n = 1)	0,0 % (n = 0)	25,5 % (n = 1)
• Not enough milk	16,7% (n = 1)	0,0% (n = 0)	25,5% (n = 1)

Children other than study infant

	Total sample (N = 300)	**Non–PMTCT (n =150)**	**PMTCT (n = 150)**
35A. Mean number of children Younger than 5 years		1,37 (SD 1,006)	1,48 (SD 0,759) Pearson's chi – square: 0,244 df: 4 95% CI
How many other Children younger Than 5 years:			
• One	72,3% (n = 99)	77,5% (n = 53)	66,7% (n = 46)
• Two	18,2% (n= 25)	16,5% (n = 11)	20,3% (n = 14)
• Three	7,3% (n = 10)	2,9% (n = 2)	11,6% (n = 8)
• More than 3	4,1% (n = 3)	2,9% (n = 2)	1,4% (n = 1)
• Total	(n = 137)	(n = 68)	(n = 69)
•			
35B. Children younger than 5 years that were breastfed	88,3% (n = 121)	86,8% (n = 59)	89,9% (n = 62) Pearson's chi square: 0,573 df: 1 95% CI
35C. How long were they breast fed (months)		16,25 (SD 9,251)	16,08 (SD 8,750)
35D. Why were they breast fed:			
• Health reasons	58,3% (n = 70)	50,% (n = 35)	56,5% (n = 35)
• Mother & baby enjoyed it	11,7% (n = 14)	10,3% (n = 6)	8,1% (n = 5)
• Nutritious	7,5% (n = 9)	6,9% (n = 6)	4,8 % (n = 3)
• Affordable	5,8% (n = 7)	5,2% (n =3)	6,5% (n = 4)
• For growth	5,0% (n = 6)	5,2% (n = 3)	4,8% (n = 3)
• It is important	5,0% (n = 6)	1,7% (n = 1)	8,1% (n = 5)
• Baby refused bottle	4,2% (n = 5)	3,4% (n = 2)	4,8% (n = 3)
35E. Why was breast feeding stopped:			
• Baby old enough	37,5% (n = 45)	39,7% (n = 23)	35,5% (n = 22)
• Working mother	15,8% (n = 19)	15,5% (n = 9)	16.1% (n = 10)
• Baby refused breast	15,8% (n = 19)	13,8% (n = 8)	17,7% (n = 11)
• Baby eating solids	7,5% (n = 9)	10,3% (n = 6)	4,8% (n = 3)
• Mother studies	6,7% (n = 8)	8,6% (n = 5)	4,8% (n = 3)
• Mother pregnant again	4,2% (n = 5)	1,7% (n =1)	6,5% (n = 4)
• Sick baby	3,4 (n =4)	3,4% (n =2)	3,2% (n = 2)
• Breast problems	2,5% (n = 3)	3,4% 9 (n = 2)	1,6% (n = 1)
• Mother ill	1,7 % (n =2)	0,0% (n = 0)	3,2% (n = 2)
36. Why were older children only bottle fed:			
• Mother studied	21,3% (n = 10)	25,9% (n = 7)	15,0% (n = 3)
• No milk	21,3% (n = 10)	22,2% (n = 6)	20,0% (n = 4)
• Baby refused to suck	14,9% (n = 7)	7,4% (n = 2)	25,0% (n = 5)

• Working mother	17,0% (n = 8)	18,5% (n = 5)	15,0% (n = 3)
• Hungry baby	8,5% (n =4)	7,4% (n = 2)	10,0% (n = 2)
• Breast problems	4,3% (n = 2)	7,4% (n = 2)	0,0% (n = 0)
• Ill mother/baby	6,4% (n = 3)	3,7% (n =1)	10,0% (n = 2)

Study infant feeding practices (related to breast feeding)

	Total sample (N = 300)	Non–PMTCT (n = 150)	PMTCT (n = 150)
37A. Ever breast fed	92% (n = 276)	94,0% (n = 141)	90,0% (n = 135)
37B. Reason for B/F:			
• Health	47,0% (n = 130)	41,1% (n = 58)	53,3% (n = 72)
• Breast is best	15,9% (n = 44)	20,6% (n = 29)	11,1% (n = 15)
• Mother & baby enjoys B/F	6,5% (n = 18)	6,3% (n = 9)	6,7% (n = 9)
• Convenience	2,9% (n = 8)	2,1% (n = 3)	3,7% (n = 5)
• Nutritious	8,7% (n = 24)	9,2% (n = 13)	8,1% (n = 11)
• Growth	6,9% (n =19)	7,1% (n = 10)	6,7% (n = 9)
• Affordable	4,0% (n = 11)	5,0% (n = 7)	3,0% (n = 4)
• Following advice	2,5% (n = 7)	2,8% (n = 4)	2,2% (n = 3)
• Don't know	2,5% (n = 7)	3,5% (n = 5)	1,5% (n = 2)
• As for other children	0,7% (n = 2)	0,0% (n = 0)	1,5% (n = 2)
• Strong bond	1,1% (n = 3)	1,4% (n = 2)	0,7% (n = 1)
37C. Reason for stopping:			
• Mother works/studies	44,0% (n = 11)	40,0% (n = 6)	50,0% (n = 5)
• Breast problems	16,0% (n = 4)	20,0% (n = 3)	10,0% (n = 1)
• Baby refuses breast	16,0% (n = 4)	20,0% (n = 3)	10,0% (n = 1)
• Lack of milk	16,0% (n = 4)	13,3% (n = 2)	20,0% (n = 2)
• Hungry baby	4,0% (n = 1)	6,7% (n = 1)	0,0% (n = 0)
• Sick mother	4,0% (n = 1)	0,0% (n = 0)	10,0% (n = 1)

Study infant health status

	Total sample (N = 300)	NON – PMTCT (n = 150)	PMTCT (n = 150)
39. Nature of illness:			
• Colds & Flu	33,0% (n = 34)	37,8% (n = 17)	29,8% (n = 17)
• Chest infection/cough	22,3% (n = 23)	20,0% (n = 9)	24,6% (n = 14)
• Skin infection/rash	15,55 (n = 16)	11,1% (n = 5)	19,3% (n = 11)
• Ear & eye infection	11,7% (n = 12)	11,1 % (n = 5)	17,5% (n = 7)
• Diarrhoea	7,8% (n = 8)	11,1% (n = 5)	8,8% (n = 5)
• Vomitting	2,0% (n = 2)	2,2% (n = 2)	1,8% (n = 1)
• Stomach cramps	2,0% (n = 2)	2,2% (n = 2)	0,0% (n = 0)
• Teething/thrush	2,9% (n = 3)	2,2% (n = 2)	1,8% (n = 1)
40. Has illness affected feeding of infant?	39,8% (n = 43)	40,7% (n = 19)	39,3% (n = 24) Pearson's chi – square: 0,909 df: 1 95% CI

Infant feeding practices

	Total sample (N = 300)	Non–PMTCT (n = 150)	PMTCT (n = 150)
41B. If feeding formula, what type:			
• Nan	71,4% (n = 80)	69,4% (n = 43)	74,0% (n = 37)
• Lactogen	13,4% (n = 15)	11,3% (n = 7)	16,0% (n = 8)
• Infacare	5,4% (n = 6)	6,5% (n = 4)	4,0% (n = 2)
• S26	7,1% (n = 8)	8,1% (n = 5)	6,0% (n = 3)
• SMA	1,8% (n= 2)	3,2% (n = 2)	0,0% (n = 0)
• Nespray	0,9% (n = 1)	1,6% (n= 1)	0,0% (n = 0) Pearson's chi square: 0,633 df:5 95% CI
43. Cumulative % according to age for adding liquids and solids to breast milk	6 weeks: 55,3% 12 weeks: 92,2% 16 weeks: 97,1% 24 weeks: 100%	6 weeks: 59,5% 12 weeks: 91,9% 16 weeks: 98,2% 24 weeks: 100%	6 weeks: 50,5% 12 weeks: 92,6% 16 weeks: 95,8% 24 weeks: 100%

44. What did you give:			
• Porridge	9,2% (n = 19)	9,0% (n = 10)	9,5% (n = 9)
• Cerelac	11,2% (n = 23)	11,7% (n = 13)	10,5% (n = 10)
• Nestum	9,7% (n = 20)	9,0% (n = 10)	10,5% (n = 10)
• Purity cereal	1,0% (n = 2)	0,9% (n = 1)	1,1% (n = 1)
• Rice cereal	0,5% (n = 1)	0,9% (n = 1)	0,0% (n = 0)
• Formula	30,6% (n = 63)	25,2% (n = 28)	36,8% (n = 35)
• Water	10,7% (n = 22)	9,9% (n = 11)	11,6% (n = 11)
• Sugar/glucose water	13,1% (n = 27)	18,0% (n = 20)	7,4% (n = 7)
• Purity baby food	9,7% (n = 20)	9,0% (n = 10)	10,5% (n = 10)
• Fruit juice	1,9% (n = 4)	3,6% (n = 4)	0,0% (n = 0)
• Vegetables	1,9% (n = 4)	0,9% (n = 1)	3,2% (n = 3)
• Ultra mel	0,5% (n = 1)	0,9% (n =1)	0,0% (n = 0)
Breast feeding experience			
	Total sample (N = 300)	**Non–PMTCT (n = 150)**	**PMTCT (n = 150)**
46. Who showed you:			
• Clinic/hospital nursing staff	82,6% (n = 166)	70,0% (n = 60)	93,0% (n = 106)
• Mother	10,4% (n = 21)	18,4% (n = 16)	4,4% (n = 5)
• Other relative	4,0% (n = 8)	4,6% (n = 6)	1,8% (n = 2)
• Clinic posters	1,0% (n = 2)	2,3% (n = 2)	0,0% (n = 0)
• Dietitian	1,0% (n =2)	2,3% (n = 2)	0,0% (n = 0)
• Nutrition advisor/friend	1,0% (n = 2)	1,1% (n = 1)	0,9% (n = 1)
47. It hurts when breast Feeding	37,8% (n = 108)	38,6% (n = 56)	36,9% (n = 52) Pearson's chi – square: 0,761 df: 1 95% CI
48. When was infant first introduced to breast feeding:			
• Immediately after birth	55,1% (n = 157)	49,7% (n = 72)	60,7% (n = 85)
• Few hours after birth	24,2% (n = 69)	29,7% (n = 43)	18,6% (n = 26)
• Day after birth	11,9% (n = 34)	12,4% (n = 18)	11,4% (n = 16)
• Two or more days after birth	8,8% (n = 25)	8,3% (n = 12)	9,3% (n = 13) Pearson's chi square: 0,252 df:4 95% CI
51A. If not given breast milk soon after birth, what was baby given:			
• Don't know	58,5% (n = 79)	55,3% (n = 42)	62,7% (n = 37)
• Formula	25,9% (n = 35)	28,9% (n = 22)	22,0% (n = 13)
• Nothing	10,4% (n = 14)	10,5% (n = 8)	10,2% (n = 6)
• Drip	3,0% (n = 4)	1,3% (n =1)	5,1% (n = 3)
• Glucose water	2,2% (n = 3)	3,95 (n = 3)	0,0% (n = 0) Pearson's chi square: 0,303 df: 4 95% CI
51B. Reason for above:			
• Baby taken to nursery	36,0% (n = 48)	33,8% (n = 25)	39,0% (n = 23)
• Can't remember/don't know	36,8% (n = 49)	40,5% (n = 30)	32,2% (n = 19)
• Mother not feeling well	4,5% (n = 6)	2,7% (n = 2)	6,8% (n = 4)
• Mother/baby slept	3,0% (n = 4)	1,4% (n = 1)	5,1% (n = 3)
• Baby sick	8,2% (n = 11)	5,4% (n = 4)	11,9% (n = 7)
• Could not produce milk/breast problems	8,2% (n = 11)	13, 5% (n = 10)	1,7% (n = 1)
• Baby refused to suck	3,0% (n = 4)	2,7% (n = 2)	3,4% (n = 2)

53. How are liquids other than B/F given: • Bottle • Spoon • Cup • Bowl	 56,0% (n = 121) 31,5% (n = 68) 10,6% (n = 23) 1,9% (n = 4)	 59,3% (n = 67) 25,7% (n = 29) 12,4% (n = 14) 2,7% (n = 3)	 52,4% (n = 54) 37,9% (n = 39) 8,k7% (n = 9) 1,0% (n = 1) Pearson's chi – square: 0,212 df: 3 95% CI
55. Who gave the information: • Clinic staff • Mother/mother – in – law • Sister/other relative • Friend/neighbour • Grandmother • Dietitian/Pharmacist	 60,0% (n = 63) 14,3% (n = 15) 14,3% (n = 15) 4,8% (n = 5) 4,8% (n = 5) 1,9% (n =2)	 57,1% (n = 24) 16,7% (n = 7) 9,5% (n = 4) 7,1% (n = 3) 4,8% (n = 2) 4,8% (n = 2)	 61,9% (n = 39) 12,7% (n = 8) 17,5% (n = 11) 3,2% (n = 2) 4,8% (n = 3) 0,0% (n = 0)

General beliefs, knowledge and practices

	Total sample (N = 300)	**Non – PMTCT (n =150)**	**PMTCT (n = 150)**
63A. Mean age (in months) at which certain foods should be given	84,7% (n = 254)	3,91 (SD1,842) 84,0% (n = 126)	4,95 (SD 2,895) 85,3% (n = 128) Pearson's chi – square: 0,812 df:2 95% CI
63B. What should be given: • Porridge • Purity baby food • Cerelac • Nestum • Vegetables • Formula • Rice cereal • Fruit/fruit juice	 21,3% (n = 54) 19,4% (n = 49) 19,4% (n = 49) 17,8% (n = 45) 15,0% (n = 38) 5,2% (n = 13) 1,2% (n = 3) 0,8% (n = 2)	 19,0% (n = 24) 20,6% (n = 26) 19,8% (n = 25) 19,8% (n = 25) 11,9% (n = 15) 6,3% (n = 8) 1,6% (n = 2) 0,8% (n = 1)	 23,6% (n = 30) 18,1% (n = 23) 18,9% (n = 24) 15,7% (n = 20) 18,1% (n = 23) 3,9% (n = 5) 0,8% (n = 1) 0,8% (n =1)
63C. Why should the above be given: • Hunger • Growth • Health • Old enough • Adds variety • Digestible • Source of vitamins • Affordable • For energy • Don't know	 40,5% (n = 102) 19,1% (n = 48) 11,1% (n = 28) 9,9% (n = 25) 6,3% (n = 16) 3,6% (n = 9) 3,6% (n = 9) 2,0% (n = 5) 1,2% (n = 3) 1,2% (n = 3)	 44,8% (n = 56) 16,8% (n = 21) 12,8% (n = 16) 7,2% (n = 9) 5,6% (n = 7) 3,2% (n = 4) 2,4% (n = 3) 2,4% (n = 3) 1,6% (n = 2) 0,8% (n = 1)	 36,2% (n = 46) 21,3% (n = 27) 9,4% (n = 12) 12,6% (n = 16) 7,1% (n = 9) 3,9% (n = 5) 4,7% (n = 6) 1,6% (n = 2) 0,8% (n = 1) 1,6% (n = 2)
64. Foods that should not be given	21,7% (n = 65)	20,1% (n = 30)	23,3% (n = 35) Pearson chi – square: 0,503 df: 1 95% CI
65B. Foods that should not be given: • Samp • Phutu • Pork • Adult food • Spicy food • Rice	 33,8% (n = 22) 16,9% (n = 11) 13,8% (n = 9) 13,8% (n = 9) 4,6% (n = 3) 4,6% (n = 3)	 23,3% (n = 7) 16,7% (n = 5) 13,3% (n = 4) 13,3% (n = 4) 6,7% (n = 2) 6,7% (n = 2)	 42,9% (n = 15) 17,1% (n = 6) 14,3% (n = 5) 14,3% (n = 5) 2,9% (n = 1) 2,9% (n = 1)

• Fruit juice	3,1% (n = 2)	3,3% (n = 1)	2,9% (n = 1)
• Formula	3,1% (n = 2)	6,7% (n =2)	0,0% (n = 0)
• Purity/maas/ Starchy food	4,6% (n = 3)	4,6% (n = 3)	0,0% (n = 0)
65C. Why should these foods not be given:			
• Indigestible	46,9% (n = 28)	33,3% (n = 12)	47,1% (n = 16)
• Chewing & swallowing difficulties	14,1% (n = 9)	13,3% (n = 4)	14,7% (n = 5)
• Infant too young	18,8% (n = 12)	26,7% (n = 8)	11,8% (n = 4)
• Religion	14,1% (n = 9)	134,3% (n = 4)	14,7% (n = 5)
• Tradition	4,7% (n = 3)	6,7% (n = 2)	2,9% (n = 1)
• Causes diarrhoea	1,6% (n = 1)	0,0% (n = 0)	2,9% (n = 1)
66. Characteristics needed by mother for proper infant feeding:			
• Healthy diet	34,7% (n = 104)	35,33% (n = 53)	34,0% (n = 51)
• Money	18,7% (n = 56)	15,3% (n = 23)	24,0% (n = 33)
• Love for baby	10,3% (n = 31)	8,0% (n = 12)	12,7% (n = 19)
• Time	9,0% (n = 27)	10,7% (n = 16)	7,3% (n = 11)
• Personal hygiene	8,0% (n = 24)	8,0% (n = 12)	8,0% (n = 12)
• Health	5,0% (n = 15)	5,3% (n = 8)	4,7% (n = 7)
• Don't know	4,3% (n = 13)	6,7% (n = 10)	2,0% (n = 3)
• Patience	3,7% (n = 11)	4,0% (n = 6)	3,3% (n = 5)
• Happiness	2,3% (n = 7)	0,7% (n = 1)	4,0% (n = 6)
• Caring nature	1,7% (n = 5)	1,3% (n = 2)	2,0% (n = 3)
• Knowledge	1,3% (n =4)	2,7% (n = 4)	0,0% (n = 0)
67. Cause of infant diarrhoea:			
• Don't know/never had	35,3% (n = 106)	31,3% (n = 47)	39,3% (n = 59)
• Dirty hands/utensils/ environment	14,3% (n = 43)	16,0% (n = 24)	12,7% (n = 19)
• Contaminated water	11,7% (n = 35)	10,7% (n = 16)	12,7% (n = 19)
• Something baby ate/drank	19,7% (n = 59)	24,0% (n = 36)	37,8% (n = 23)
• Teething	6,7% (n = 20)	9,3% (n = 14)	4,0% (n = 6)
• Infection/ from mother	4,3% (n = 13)	2,0% (n = 3)	6,7% (n = 10)
• Allergy	2,7% (n = 8)	0,0% (n = 0)	5,3% (n = 8)
• Dirty stomach	1,7% (n = 5)	2,0% (n = 3)	1,3% (n = 2)
• Too much/ too little food	1,0% (n = 3)	0,7% (n = 1)	1,3% (n = 2)
68A. Do feeding practices affect baby's health:			
• Yes	90,3% (n = 271)	89,3% (n = 134)	91,3% (n = 137)
• No	6,3% (n = 19)	6,7% (n = 10)	6,0% (n = 9)
• Don't know	3,3% (n = 10)	4,0% (n = 6)	2,7% (n = 4)
			Pearson's chi – square: 0,784
			df: 2
			95% CI
68B. How do feeding practices affect infant health:			
• Happy, healthy baby	30,8% (n = 85)	37,0% (n = 51)	24,6% (n = 34)
• Adequate growth	18,5% (n = 51)	22,5% (n = 31)	42,8% (n = 59)
• B/F is best/satisfies/ protects	17,4% (n = 48)	13,8% (n = 19)	21,0% (n = 29)
• Don't know	9,4% (n = 26)	16,7% (n = 23)	2,2% (n = 3)
• Active baby	2,9% (n = 8)	2,9% (n = 4)	2,9% (n = 4)
• Hygienic bottle/F	1,4% (n = 4)	1,4% (n = 2)	1,4% (n = 2)
• Following clinic advice	1,4% (n = 4)	0,7% (n = 1)	2,2% (n = 3)
• Baby has large appetite	0,7% (n = 2)	0,0% (n = 0)	1,4% (n = 2)

• Mother's diet	0,7% (n = 2)	1,4% (n = 2)	0,0% (n = 0)
• Naughty baby	0,7% (n = 2)	1,4% (n = 2)	0,0% (n = 0)

Infant feeding education			
	Total sample (N = 300)	**Non – PMTCT (n = 150)**	**PMTCT (n = 150)**
69. Where would you like to receive information:			
• Clinic/hospital	90,6% (n = 271)	89,9% (n = 134)	91,3% (n = 137)
• Home	4,3% (n = 13)	4,0% (n = 6)	4,7% (n = 7)
• Church/school hall	1,7% (n = 5)	1,3% (n = 2)	2,0% (n = 3)
• Anywhere	1,3% (n =4)	2,7% (n = 4)	0,0% (n = 0)
• Infant food manufacturers	1,0% (n = 3)	0,7% (n = 1)	1,3% (n = 2)
70. How would you like to receive information:			
• Personal conversation with clinic staff	62,3% (n = 187)	58,7% (n = 88)	66,0% (n = 99)
• Brochure to take home	9,7% (n = 29)	10,0% (n = 15)	9,3% (n = 14)
• Radio programme	8,0% (n = 24)	8,0% (n = 12)	8,0% (n = 12)
• Magazine	7,3% (n = 22)	10,0% (n = 15)	4,7% (n = 7)
• Personal conversation with friend/relative	4,7% (n = 14)	6,75 (n = 10)	2,7% (n = 4)
• Group meeting with other mothers	3,7% (n = 11)	4,0% (n = 6)	3,3% (n = 5)
• Television	2,3% (n = 7)	0,7% (n = 1)	4,0% (n = 6)
71. If you were never shown how to B/F, would you have liked to be shown:	82,8% (n = 193)	84,4% (n = 103)	81,1% (n = 90) Pearson's chi – square: 0,499 df: 1 95% CI

Barriers to infant feeding			
	Total sample (N = 300)	**Non – PMTCT (n = 150)**	**PMTCT (n = 150)**
72. Feeding the baby the way you would like to	93,7% (n = 281)	93,3% (n = 140)	94,0% (n = 141) Pearson's chi – square: 0,813 df: 1 95% CI
73. How would you like to feed the baby:			
• Breast feed	36,8% (n = 7)	30,0% (n = 3)	44,4% (n = 4)
• Feed Nestum/ cerelac/purity	31,6% (n = 6)	30,0% (n = 3)	33,3% (n =3)
• Add formula	10,5% (n = 2)	10,0% (n = 1)	11,1% (n = 1)
• Larger variety	10,5% (n = 2)	10,0% (n =1)	11,1% (n = 1)
• Unsure if feeding decision/advice is correct	10,5% (n = 2)	20,0% (n = 2)	0,0% (n = 0)
74. Were you influenced to feed as is currently the case	36,8% (n = 7)	20,0% (n = 2)	55,6% (n = 5) Pearson's chi – square: 0,109 df: 1 95% CI
75. Who influenced regarding your current practice:			

• Own decision	52,6% (n = 10)	60,0% (n = 6)	44,4% (n = 4)
• Clinic staff	21,1% (n = 4)	0,0% (n = 0)	44,4% (n = 4)
• Sister/other relative	15,8% (n = 3)	30,0% (n = 3)	0,0% (n = 0)
• Mother	10,5% (n = 2)	10,0% (n =1)	11,1% (n = 1)
76. What influenced your current practice:			
• Lack of money	41,2% (n = 7)	50,0% (n = 5)	28,6% (n = 2)
• Breast problems	35,3% (n = 6)	40,0% (n = 4)	28,6% (n = 2)
• Poor health	11,8% (n = 2)	0,0% (n = 0)	28,6% (n = 2)
• Lack of time/work	11,8% (n = 2)	10,0% (n = 1)	14,3% (n = 1)
77. For how long have You not been healthy:			
• Few days	18,2% (n = 4)	30,0% (n = 30)	8,3% (n = 1)
• Few weeks	13,6% (n = 3)	20,0% (n = 2)	8,3% (n = 1)
• Few months	36,4% (n = 8)	0,0% (n = 0)	66,7% (n = 8)
• Few years	22,7% (n = 5)	30,0% (n = 3)	16,7% (n = 2)
• Don't know	9,1% (n = 2)	20,0% (n =2)	0,0% (n = 0)
86. Offered AIDS test	79,2% (n = 236)	71,6% (n = 106)	86,7% (n = 130) Pearson's chi – square: 0,004 df: 2 95% CI
87. Took the test	89,9% (n = 214)	82,4% (n = 89)	96,2% (n = 125) Pearson's chi – square: 0,002 df: 2 95% CI